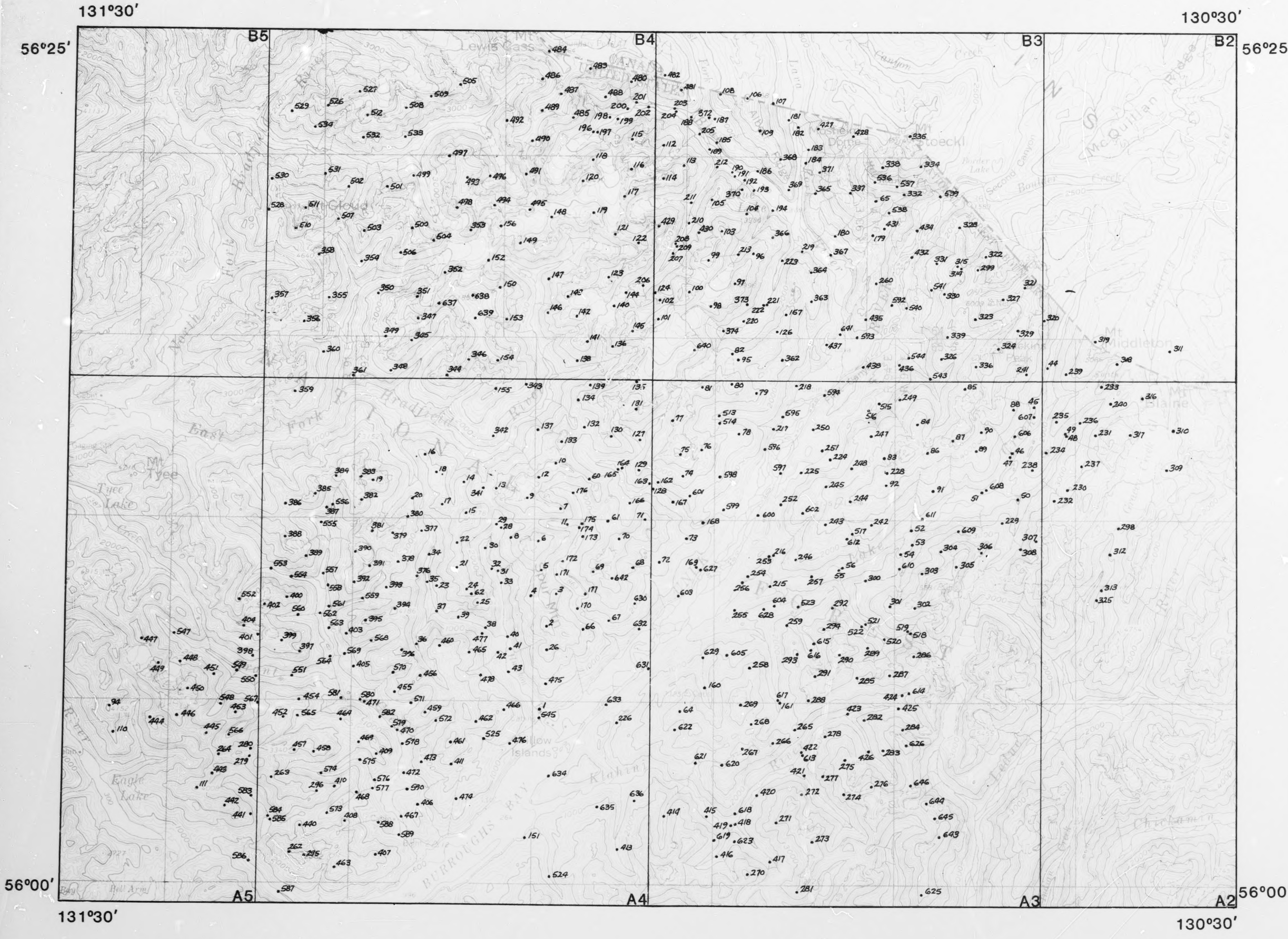
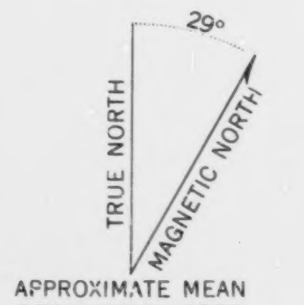
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

GAMMA-RAY READINGS



Base from USGS 1:250,000 topo series:
Bradfield Canal, 1955, ALASKA-CANADA.

LOCATIONS OF GAMMA-RAY READING SITES



APPROXIMATE MEAN
DECLINATION, 1955

SCALE 1:125 000

Discussion

Introduction

A survey of total gamma radiation intensities at ground sites throughout the central portion of the Bradfield Canal quadrangle was conducted during June and July of 1979. This sheet contains a list of the data collected and a map showing the locations of sites where readings were made. The accompanying sheet contains maps showing the distribution of relatively high gamma-ray intensity readings.

The study area is underlain by a variety of calc-alkaline granitic plutons, and medium- and high-grade schists and gneisses characteristic of the Coast Plutonic Complex. The rugged, mountainous terrain consists of jagged peaks to 2100 m elevation and steep-walled canyons carved by roaring rivers

Factors Affecting Gamma-Ray Readings

Cosmic rays probably exerted little influence on measurements made in this study because the detector was close to the ground while measurements were being made. Other atmospheric sources of gamma rays (mainly radon gas) were probably homogenized by the strong breezes common to this mountainous region, and flushed from the air by frequent rain. During the 24 days between the first and last days on which gamma-ray measurements were made, only 9 days had no appreciable rain during the day, with a maximum of 3 such days in a row. Even when it didn't rain during the day, there was often rain at night. Rock and gravel areas were usually wet and vegetated areas (soil areas actually consist largely of decayed vegetation) never dried out

Gamma-Ray Readings

Sequence	Station	Latitude	Longitude	Quad	Reading	Site Type
1	79-6-22	56 05 37	131 05 45	A4	0.18	Vegetation
2	79RK002	56 07 57	131 05 19	A4	0.07	Snow or Ice
3	79GJ001	56 08 52	131 04 52	A4	0.05	Snow or Ice
4	79MH001	56 08 48	131 06 09	A4	0.06	Snow or Ice
5	79GJ002	56 09 33	131 05 38	A4	0.05	Rock
6	79DM001	56 10 22	131 05 48	A4	0.12	Snow or Ice
7	79MH002	56 11 18	131 04 39	A4	0.05	Snow or Ice
8	79GJ003	56 10 29	131 07 12	A4	0.06	Snow or Ice
9	79GJ004	56 11 36	131 06 23	A4	0.04	Snow or Ice
10	79GJ005	56 12 37	131 04 56	A4	0.20	Snow or Ice
11	79RK003	56 10 52	131 04 19	A4	0.03	Snow or Ice
12	79GJ006	56 12 12	131 05 48	A4	0.07	Snow or Ice
13	79DM002	56 11 53	131 07 59	A4	0.06	Snow or Ice
14	79GJ007	56 12 03	131 09 40	A4	0.06	Snow or Ice
15	79MH003	56 11 10	131 09 31	A4	0.13	Rock
16	79GJ008	56 12 50	131 11 41	A4	0.12	Snow or Ice
17	79RK004	56 11 25	131 10 46	A4	0.03	Snow or Ice
18	79GJ009	56 12 20	131 11 05	A4	0.03	Snow or Ice
19	79DM003	56 12 05	131 14 21	A4	0.09	Snow or Ice
20	79ER002	56 11 35	131 12 19	A4	0.10	Vegetation
21	79MH004	56 09 37	131 09 59	A4	0.06	Snow or Ice
22	79GJ010	56 10 19	131 09 59	A4	0.05	Snow or Ice
23	79DM004	56 09 05	131 11 00	A4	0.14	Vegetation
24	79ER003	56 08 59	131 09 26	A4	0.08	Snow or Ice
25	79RK005	56 08 37	131 08 55	A4	0.08	Snow or Ice
26	79RK006	56 07 17	131 05 20	A4	0.13	Vegetation
27	79-6-23	56 05 37	131 05 45	A4	0.18	Vegetation
28	79RK800	56 10 45	131 07 45	A4	0.02	Snow or Ice
29	79RK801	56 10 51	131 07 58	A4	0.03	Snow or Ice
30	79RK802	56 10 10	131 08 32	A4	0.30	Sand or Gravel
31	79RK804	56 09 31	131 07 52	A4	0.30	Sand or Gravel
32	79RK805	56 09 35	131 08 11	A4	0.28	Sand or Gravel
33	79RK806	56 09 12	131 07 42	A4	0.20	Vegetation
34	79MH502	56 09 58	131 11 24	A4	0.30	Vegetation
35	79MH503	56 09 11	131 11 30	A4	0.18	Vegetation
36	79MH506	56 07 24	131 12 00	A4	0.24	Vegetation
37	79MH507	56 08 21	131 11 01	A4	0.25	Sand or Gravel
38	79MH510	56 07 53	131 08 30	A4	0.32	Sand or Gravel
39	79MH509	56 08 11	131 09 53	A4	0.40	Sand or Gravel
40	79MH511	56 07 38	131 07 20	A4	0.20	Sand or Gravel
41	79MH512	56 07 18	131 07 13	A4	0.07	Vegetation
42	79MH513	56 07 11	131 07 50	A4	0.08	Vegetation
43	79MH515	56 06 38	131 07 17	A4	0.21	Sand or Gravel
44	79RK808	56 15 22	130 39 38	B2	0.31	Sand or Gravel
45	79RK809	56 14 15	130 40 20	A3	0.06	Vegetation
46	79RK810	56 12 56	130 41 29	A3	0.08	Vegetation
47	79RK811	56 12 50	130 41 35	A3	0.08	Vegetation
48	79RK812	56 13 27	130 38 40	A2	0.05	Vegetation
49	79RK813	56 13 30	130 38 44	A2	0.05	Vegetation
50	79RK816	56 11 37	130 41 10	A3	0.08	Vegetation
51	79RK817	56 11 49	130 43 00	A3	0.34	Sand or Gravel
52	79GJ501	56 10 43	130 46 39	A3	0.26	Sand or Gravel
53	79GJ503	56 10 19	130 46 35	A3	0.25	Vegetation
54	79GJ504	56 10 03	130 47 11	A3	0.26	Rock
55	79GJ505	56 09 35	130 50 20	A3	0.20	Sand or Gravel
56	79GJ506	56 09 39	130 50 10	A3	0.32	Sand or Gravel
57	79-6-25	56 05 37	131 05 45	A4	0.18	Vegetation
58	78ER152	56 01 59	131 31 31	A5	0.05	Snow or Ice
59	78ER154	56 02 18	131 33 29	A5	0.03	Snow or Ice
60	79RK009	56 12 09	131 03 14	A4	0.04	Snow or Ice
61	79RK010	56 10 58	131 02 14	A4	0.04	Snow or Ice
62	79GJ013	56 08 51	131 09 13	A4	0.03	Snow or Ice
63	79-6-26	56 05 37	131 05 45	A4	0.19	Vegetation
64	79JD802	56 05 32	130 58 28	A3	0.24	Vegetation
65	79GJ014	56 20 10	130 48 31	A3	0.12	Snow or Ice
66	79MH010	56 07 52	131 03 27	A4	0.10	Vegetation
67	79RK011	56 08 06	131 02 09	A4	0.17	Vegetation
68	79MH011	56 09 38	131 00 55	A4	0.04	Snow or Ice
69	79RK012	56 09 31	131 02 57	A4	0.07	Snow or Ice
70	79MH012	56 10 27	131 01 38	A4	0.04	Snow or Ice
71	79RK013	56 11 01	131 00 18	A4	0.13	Rock
72	79MH013	56 09 48	130 59 34	A3	0.05	Snow or Ice
73	79RK014	56 10 29	130 58 10	A3	0.08	Vegetation
74	79MH014	56 12 16	130 58 23	A3	0.06	Snow or Ice
75	79MH015	56 12 53	130 58 32	A3	0.22	Rock
76	79RK015	56 13 01	130 57 25	A3	0.05	Snow or Ice
77	79MH016	56 13 51	130 58 55	A3	0.04	Snow or Ice
78	79JD805	56 13 28	130 55 31	A3	0.06	Snow or Ice
79	79MH017	56 14 38	130 54 38	A3	0.27	Rock
80	79MH018	56 14 54	130 55 52	A3	0.16	Snow or Ice
81	79JD806	56 14 49	130 57 25	A3	0.03	Snow or Ice
82	79RK016	56 15 44	130 55 53	B3	0.26	Rock
83	79JD807	56 12 48	130 48 02	A3	0.46	Snow or Ice
84	79MH019	56 13 45	130 46 20	A3	0.24	Rock
85	79RK017	56 14 46	130 43 54	A3	0.10	Snow or Ice
86	79JD808	56 12 57	130 45 48	A3	0.20	Rock
87	79MH020	56 13 17	130 44 30	A3	0.24	Rock
88	79RK018	56 14 11	130 41 25	A3	0.13	Vegetation
89	79JD809	56 13 00	130 43 18	A3	0.27	Vegetation
90	79MH021	56 13 32	130 43 04	A3	0.16	Rock
91	79JD810	56 11 51	130 45 31	A3	0.21	Vegetation
92	79RK019	56 12 01	130 47 55	A3	0.16	Rock
93	79-6-27	56 05 37	131 05 45	A4	0.19	Vegetation
94	79JD811	56 05 34	131 27 38	A5	0.22	Rock
95	79DM017	56 15 36	130 55 35	B3	0.26	Rock
96	79MH022	56 18 39	130 54 48	B3	0.16	Rock
97	79ER004	56 17 47	130 55 46	B3	0.18	Rock
98	79RK020	56 17 08	130 57 00	B3	0.20	Rock
99	79MH023	56 18 27	130 57 08	B3	0.24	Rock
100	79ER005	56 17 32	130 58 08	B3	0.15	Rock
101	79RK021	56 16 46	130 59 43	B3	0.10	Rock
102	79ER006	56 17 19	130 59 38	B3	0.20	Rock
103	79RK022	56 19 18	130 56 28	B3	0.16	Rock
104	79MH024	56 19 47	130 55 11	B3	0.22	Rock
105	79ER007	56 20 12	130 57 00	B3	0.22	Rock
106	79RK023	56 23 07	130 55 13	B3	0.26	Rock
107	79MH025	56 22 58	130 53 52	B3	0.38	Rock
108	79ER008	56 23 13	130 56 37	B3	0.16	Vegetation
109	79RK024	56 22 11	130 54 33	B3	0.30	Vegetation
110	79JD814	56 04 49	131 27 25	A5	0.09	Vegetation
111	79JD815	55 03 15	131 23 04	A5	0.14	Rock
112	79ER009	56 21 45	130 59 32	B3	0.18	Rock
113	79MH026	56 21 11	130 58 28	B3	0.16	Rock
114	79RK025	56 20 49	130 59 31	B3	0.20	Rock
115	79ER010	56 21 55	131 01 10	B4	0.08	Rock
116	79MH027	56 21 04	131 01 10	B4	0.10	Rock
117	79RK026	56 20 17	131 01 31	B4	0.24	Rock
118	79ER011	56 21 20	131 03 09	B4	0.26	Rock
119	79RK027	56 19 48	131 03 07	B4	0.27	Rock
120	79MH028	56 20 43	131 03 40	B4	0.21	Rock
121	79ER012	56 19 11	131 01 59	B4	0.25	Rock
122	79RK028	56 18 57	131 00 46	B4	0.20	Rock
123	79ER013	56 17 57	131 02 17	B4	0.13	Rock
124	79RK029	56 17 30	130 59 55	B3	0.17	Rock
125	79-6-28	56 05 37	131 05 45	A4	0.17	Vegetation
126	79GJ020	56 16 24	130 53 35	B3	0.15	Rock
127	79JD819	56 13 18	131 00 37	A4	0.23	Rock
128	79ER014	56 11 53	130 59 55	A3	0.12	Vegetation
129	79MH030	56 12 25	131 00 38	A4	0.08	Rock
130	79RK030	56 13 23	131 02 06	A4	0.16	Rock
131	79JD820	56 14 11	131 00 49	A4	0.21	Rock
132	79ER015	56 13 39	131 03 29	A4	0.21	Rock
133	79MH031	56 13 14	131 04 38	A4	0.13	Rock
134	79RK031	56 14 26	131 03 47	A4	0.21	Vegetation
135	79JD821	56 14 58	131 00 49	A4	0.17	Rock
136	79ER016	56 15 58	131 02 04	B4	0.16	Vegetation
137	79MH032	56 13 34	131 05 52	A4	0.15	Vegetation
138	79RK032	56 15 33	131 03 53	B4	0.15	Vegetation

Gamma-Ray Readings

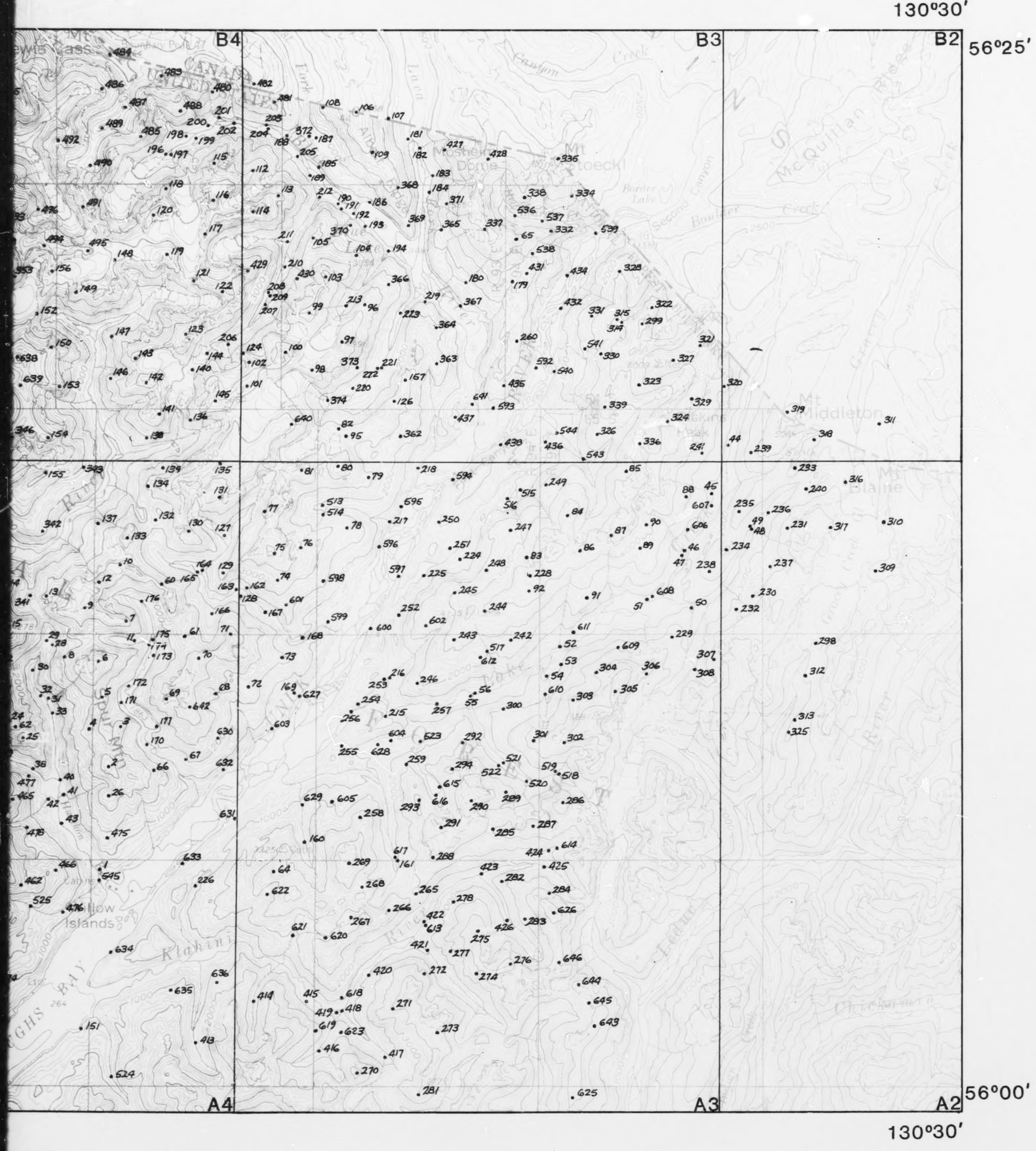
Sequence	Station	Latitude	Longitude	Quad	Reading	Site Type
217	79MH517	56 13 37	130 53 44	A3	0.25	Sand or Gravel
218	79MH518	56 14 52	130 52 34	A3	0.18	Rock
219	79MH519	56 18 43	130 52 19	B3	0.34	Sand or Gravel
220	79MH520	56 16 42	130 55 19	B3	0.20	Sand or Gravel
221	79MH521	56 17 11	130 54 08	B3	0.25	Sand or Gravel
222	79MH522	56 17 10	130 54 15	B3	0.28	Sand or Gravel
223	79GJ517	56 18 27	130 53 21	B3	0.34	Sand or Gravel
224	79GJ518	56 12 45	130 50 49	A3	0.28	Sand or Gravel
225	79GJ519	56 12 22	130 52 18	A3	0.30	Vegetation
226	79GJ520	56 05 12	131 01 42	A4	0.10	Sand or Gravel
227	79-7-03	56 05 37	131 05 45	A4	0.15	Vegetation
228	79GJ027	56 12 22	130 47 53	A3	0.18	Rock
229	79MH038	56 10 57	130 41 57	A3	0.27	Vegetation
230	79ER027	56 11 53	130 38 38	A2	0.18	Vegetation
231	79RK042	56 13 27	130 37 12	A2	0.26	Rock
232	79MH039	56 11 35	130 39 19	A2	0.13	Rock
233	79RK043	56 14 51	130 36 52	A2	0.20	Rock
234	79ER028	56 12 58	130 39 44	A2	0.12	Vegetation
235	79MH041	56 13 50	130 39 12	A2	0.32	Rock
236	79RK044	56 13 49	130 38 00	A2	0.23	Vegetation
237	79ER029	56 12 34	130 37 55	A2	0.17	Rock
238	79MH040	56 12 27	130 40 25	A3	0.22	Vegetation
239	79MH042	56 15 12	130 38 42	B2	0.25	Rock
240	79RK045	56 14 21	130 36 25	A2	0.31	Rock
241	79ER030	56 15 12	130 40 45	A3	0.18	Vegetation
242	79MH043	56 10 52	130 48 40	A3	0.42	Vegetation
243	79RK046	56 10 53	130 51 02	A3	0.18	Vegetation
244	79ER031	56 11 32	130 49 46	A3	0.22	Rock
245	79MH044	56 11 58	130 51 01	A3	0.14	Vegetation
246	79RK047	56 09 53	130 52 33	A3	0.08	Vegetation
247	79ER032	56 13 25	130 48 42	A3	0.15	Vegetation
248	79RK048	56 12 29	130 49 43	A3	0.12	Vegetation
249	79MH045	56 14 27	130 47 13	A3	0.12	Vegetation
250	79ER033	56 13 36	130 51 41	A3	0.08	Vegetation
251	79RK049	56 12 59	130 51 14	A3	0.10	Vegetation
252	79MH046	56 11 26	130 53 20	A3	0.20	Vegetation
253	79ER034	56 09 58	130 53 54	A3	0.26	Vegetation
254	79MH047	56 09 24	130 55 00	A3	0.30	Vegetation
255	79RK050	56 08 26	130 55 40	A3	0.08	Vegetation
256	79MH048	56 09 13	130 55 17	A3	0.35	Sand or Gravel
257	79ER035	56 09 24	130 51 45	A3	0.13	Vegetation
258	79RK051	56 06 47	130 54 54	A3	0.10	Vegetation
259	79MH049	56 08 00	130 53 00	A3	0.14	Vegetation
260	79JD843	56 17 48	130 48 29	A3	0.14	Vegetation
261	79-7-04	56 05 37	131 05 45	A4	0.17	Vegetation
262	79DM025	56 01 26	131 18 21	A4	0.14	Rock
263	79GJ031	56 03 34	131 19 20	A4	0.15	Vegetation
264	79MH050	56 04 12	131 22 01	A3	0.16	Rock
265	79RK052	56 04 59	130 52 32	A3	0.18	Vegetation
266	79JD844	56 04 38	130 53 40	A3	0.20	Rock
267	79ER036	56 04 28	130 55 16	A3	0.16	Rock
268	79RK053	56 05 10	130 54 48	A3	0.18	Vegetation
269	79JD845	56 05 43	130 55 20	A3	0.22	Rock
270	79ER037	56 00 54	130 54 57	A3	0.19	Vegetation
271	79JD846	56 02 22	130 53 29	A3	0.24	Vegetation
272	79RK054	56 03 11	130 52 13	A3	0.14	Vegetation
273	79JD847	56 01 49	130 51 40	A3	0.17	Rock
274	79ER038	56 03 11	130 50 02	A3	0.19	Vegetation
275	79RK055	56 04 10	130 49 59	A3	0.17	Vegetation
276	79ER039	56 03 24	130 48 38	A3	0.25	Rock
277	79JD848	56 03 42	130 51 07	A3	0.07	Vegetation
278	79RK056	56 04 50	130 51 00	A3	0.08	Vegetation
279	79MH053	56 04 11	131 20 27	A5	0.15	Rock
280	79MH054	56 04 23	131 20 25	A5	0.15	Vegetation
281	79RK057	56 00 24	130 52 24	A3	0.16	Vegetation
282	79JD849	56 05 19	130 49 02	A3	0.12	Vegetation
283	79RK058	56 04 27	130 48 04	A3	0.21	Vegetation
284	79ER040	56 05 02	130 47 03	A3	0.18	Rock
285	79JD850	56 06 31	130 49 22	A3	0.18	Vegetation
286	79RK059	56 07 07	130 46 30	A3	0.10	Rock
287	79ER041	56 06 35	130 47 44	A3	0.22	Rock
288	79JD851	56 05 52	130 51 51	A3	0.17	Sand or Gravel
289	79ER042	56 07 22	130 48 52	A3	0.12	Vegetation
290	79RK060	56 07 10	130 50 17	A3	0.16	Rock
291	79JD852	56 06 33	130 51 33	A3	0.16	Rock
292	79ER043	56 08 30	130 50 40	A3	0.10	Vegetation
293	79JD853	56 07 11	130 52 29	A3	0.17	Vegetation
294	79RK061	56 07 54	130 51 06	A3	0.19	Rock
295	79DM027	56 01 21	131 17 37	A4	0.15	Rock
296	79GJ038	56 03 11	131 17 01	A4	0.30	Rock
297	79-7-05	56 05 37	131 05 45	A4	0.14	Vegetation
298	79JD854	56 10 47	130 36 00	A2	0.10	Vegetation
299	79DM035	56 18 11	130 43 14	B3	0.22	Rock
300	79MH056	56 09 17	130 48 59	A3	0.10	Vegetation
301	79ER044	56 08 33	130 47 44	A3	0.25	Rock
302	79RK062	56 08 30	130 46 27	A3	0.29	Rock
303	79MH057	56 09 29	130 46 05	A3	0.22	Rock
304	79ER045	56 10 08	130 45 07	A3	0.24	Rock
305	79RK063	56 09 42	130 44 19	A3	0.24	Rock
306	79MH058	56 10 06	130 43 02	A3	0.18	Rock
307	79ER046	56 10 25	130 40 13	A3	0.32	Rock
308	79RK064	56 10 12	130 41 01	A3	0.42	Rock
309	79ER047	56 12 27	130 33 32	A2	0.26	Rock
310	79MH059	56 13 35	130 33 12	A2	0.32	Rock
311	79RK065	56 15 51	130 33 22	B2	0.26	Rock
312	79JD858	56 10 02	130 36 26	A2	0.31	Rock
313	79JD859	56 09 01	130 36 53	A2	0.18	Rock
314	79GJ041	56 18 14	130 44 06	B3	0.30	Rock
315	79GJ042	56 18 18	130 44 17	B3	0.29	Rock
316	79MH060	56 14 31	130 34 45	A2	0.25	Vegetation
317	79ER048	56 13 28	130 35 24	A2	0.32	Rock
318	79RK066	56 15 30	130 36 04	B2	0.30	Rock
319	79MH061	56 16 08	130 37 11	B2	0.24	Rock
320	79ER049	56 16 44	130 39 52	B2	0.28	Rock
321	79RK067	56 17 41	130 40 50	B3	0.28	Rock
322	79MH062	56 18 34	130 42 50	B3	0.20	Rock
323	79ER051	56 16 47	130 43 23	B3	0.28	Rock
324	79RK068	56 15 56	130 42 11	B3	0.18	Rock
325	79JD860	56 08 44	130 37 07	A2	0.20	Rock
326	79JD861	56 15 38	130 45 06	B3	0.08	Vegetation
327	79ER050	56 17 21	130 41 57	B3	0.25	Rock
328	79MH063	56 19 25	130 44 11	A3	0.24	Rock
329	79RK069	56 16 27	130 41 10	B3	0.06	Rock
330	79ER052	56 17 30	130 44 58	B3	0.23	Rock
331	79JD862	56 18 23	130 45 22	B3	0.25	Rock
332	79MH064	56 20 22	130 47 05	B3	0.16	Vegetation
334	79JD863	56 21 10	130 46 13	B3	0.42	Rock
335	79ER053	56 22 02	130 46 47	B3	0.20	Rock
336	79RK070	56 15 25	130 43 20	B3	0.25	Vegetation
337	79RK071	56 20 24	130 49 49	B3	0.36	Rock
338	79ER054	56 21 08	130 48 10	B3	0.40	Rock
339	79DM040	56 16 16	130 44 48	B3	0.17	Vegetation
340	79-7-06	56 05 37	131 05 45	A4	0.17	Vegetation
341	79MH065	56 11 54	131 08 39	A4	0.17	Vegetation
342	79JD864	56 13 23	131 08 11	A4	0.12	Vegetation
343	79RK072	56 14 52	131 06 30	A4	0.18	Vegetation
344	79MH066	56 15 07	131 10 38	B4	0.20	Rock
345	79JD865	56 16 07	131 12 28	B4	0.14	Rock
346	79RK073	56 15 34	131 09 31	B4	0.16	Rock
347	79MH067	56 16 45	131 12 08	B4	0.12	Rock
348	79JD866	56 15 14	131 13 31	B4	0.14	Vegetation
349	79RK074	56 16 13	131 13 48	B4	0.18	Rock
350	79JD867	56 17 27	131 14 12	B4	0.08	Vegetation
351	79MH068	56 17 22	131 12 12	B4	0.20	Rock
352	79RK075	56 18 04	131 10 47	B4	0.18	Vegetation
353	79JD868	56 19 17	131 09 28	B4	0.20	Rock
354	79MH069	56 18 22	131 15 05	B4	0.11	Rock

GAMMA-RAY READINGS

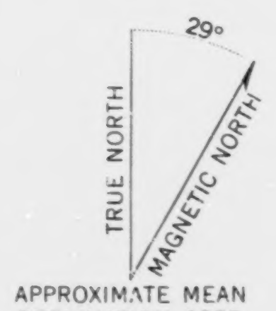
OPEN-FILE REPORT

81-840

SHEET 1 OF 2

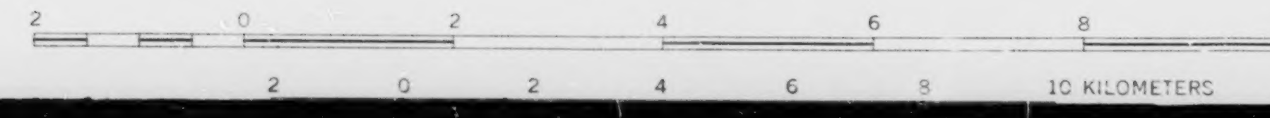


OCATIONS OF GAMMA-RAY READING SITES



APPROXIMATE MEAN
DECLINATION, 1955

SCALE 1:125 000



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n, and flushed from the air by frequent rain. During the 24 days between
first and last days on which gamma-ray measurements were made, only 9 days
o appreciable rain during the day, with a maximum of 3 such days in a
Even when it didn't rain during the day, there was often
at night. Rock and gravel areas were usually wet and vegetated areas
areas actually consist largely of decayed vegetation) never dried out

Type

Gamma-Ray Readings

Sequence	Station	Latitude	Longitude	Quad	Reading	Site Type
1	79-6-22	56 05 37	131 05 45	A4	0.18	Vegetation
2	79RK002	56 07 57	131 05 19	A4	0.07	Snow or Ice
3	79GJ001	56 08 52	131 04 52	A4	0.05	Snow or Ice
4	79MH001	56 08 48	131 06 09	A4	0.06	Snow or Ice
5	79GJ002	56 09 33	131 05 38	A4	0.05	Rock
6	79DM001	56 10 22	131 05 48	A4	0.12	Snow or Ice
7	79MH002	56 11 18	131 04 39	A4	0.05	Snow or Ice
8	79GJ003	56 10 29	131 07 12	A4	0.06	Snow or Ice
9	79GJ004	56 11 36	131 06 23	A4	0.04	Snow or Ice
10	79GJ005	56 12 37	131 04 56	A4	0.20	Snow or Ice
11	79RK003	56 10 52	131 04 19	A4	0.03	Snow or Ice
12	79GJ006	56 12 12	131 05 48	A4	0.07	Snow or Ice
13	79DM002	56 11 53	131 07 59	A4	0.06	Snow or Ice
14	79GJ007	56 12 03	131 09 40	A4	0.06	Snow or Ice
15	79MH003	56 11 10	131 09 31	A4	0.13	Rock
16	79GJ008	56 12 50	131 11 41	A4	0.12	Snow or Ice
17	79RK004	56 11 25	131 10 46	A4	0.03	Snow or Ice
18	79GJ009	56 12 20	131 11 05	A4	0.03	Snow or Ice
19	79DM003	56 12 05	131 14 21	A4	0.09	Snow or Ice
20	79ER002	56 11 35	131 12 19	A4	0.10	Vegetation
21	79MH004	56 09 37	131 09 59	A4	0.06	Snow or Ice
22	79GJ010	56 10 19	131 09 59	A4	0.05	Snow or Ice
23	79DM004	56 09 05	131 11 00	A4	0.14	Vegetation
24	79ER003	56 08 59	131 09 26	A4	0.08	Snow or Ice
25	79RK005	56 08 37	131 08 55	A4	0.08	Snow or Ice
26	79RK006	56 07 17	131 05 20	A4	0.13	Vegetation
27	79-6-23	56 05 37	131 05 45	A4	0.18	Vegetation
28	79RK800	56 10 45	131 07 45	A4	0.02	Snow or Ice
29	79RK801	56 10 51	131 07 58	A4	0.03	Snow or Ice
30	79RK802	56 10 10	131 08 32	A4	0.30	Sand or Gravel
31	79RK804	56 09 31	131 07 52	A4	0.30	Sand or Gravel
32	79RK805	56 09 35	131 08 11	A4	0.28	Sand or Gravel
33	79RK806	56 09 12	131 07 42	A4	0.20	Vegetation
34	79MH502	56 09 58	131 11 24	A4	0.30	Vegetation
35	79MH503	56 09 11	131 11 30	A4	0.18	Vegetation
36	79MH506	56 07 24	131 12 00	A4	0.24	Vegetation
37	79MH507	56 08 21	131 11 01	A4	0.25	Sand or Gravel
38	79MH510	56 07 53	131 08 30	A4	0.32	Sand or Gravel
39	79MH509	56 08 11	131 09 53	A4	0.40	Sand or Gravel
40	79MH511	56 07 38	131 07 20	A4	0.20	Sand or Gravel
41	79MH512	56 07 18	131 07 13	A4	0.07	Vegetation
42	79MH513	56 07 11	131 07 50	A4	0.08	Vegetation
43	79MH515	56 06 38	131 07 17	A4	0.21	Sand or Gravel
44	79RK808	56 15 22	130 39 38	B2	0.31	Sand or Gravel
45	79RK809	56 14 15	130 40 20	A3	0.06	Vegetation
46	79RK810	56 12 56	130 41 29	A3	0.08	Vegetation
47	79RK811	56 12 50	130 41 35	A3	0.08	Vegetation
48	79RK812	56 13 27	130 38 40	A2	0.05	Vegetation
49	79RK813	56 13 30	130 38 44	A2	0.05	Vegetation
50	79RK816	56 11 37	130 41 10	A3	0.08	Vegetation
51	79RK817	56 11 49	130 43 00	A3	0.34	Sand or Gravel
52	79GJ501	56 10 43	130 46 39	A3	0.26	Sand or Gravel
53	79GJ503	56 10 19	130 46 35	A3	0.25	Vegetation
54	79GJ504	56 10 03	130 47 11	A3	0.26	Rock
55	79GJ505	56 09 35	130 50 20	A3	0.20	Sand or Gravel
56	79GJ506	56 09 39	130 50 10	A3	0.32	Sand or Gravel
57	79-6-25	56 05 37	131 05 45	A4	0.18	Vegetation
58	78ER152	56 01 59	131 31 31	A5	0.05	Snow or Ice
59	78ER154	56 02 18	131 33 29	A5	0.03	Snow or Ice
60	79RK009	56 12 09	131 03 14	A4	0.04	Snow or Ice
61	79RK010	56 10 58	131 02 14	A4	0.04	Snow or Ice
62	79GJ013	56 08 51	131 09 13	A4	0.03	Snow or Ice
63	79-6-26	56 05 37	131 05 45	A4	0.19	Vegetation
64	79JD802	56 05 32	130 58 28	A3	0.24	Vegetation
65	79GJ014	56 20 10	130 48 31	A3	0.12	Snow or Ice
66	79MH010	56 07 52	131 03 27	A4	0.10	Vegetation
67	79RK011	56 08 06	131 02 09	A4	0.17	Vegetation
68	79MH011	56 09 38	131 00 55	A4	0.04	Snow or Ice
69	79RK012	56 09 31	131 02 57	A4	0.07	Snow or Ice
70	79MH012	56 10 27	131 01 38	A4	0.04	Snow or Ice
71	79RK013	56 11 01	131 00 18	A4	0.13	Rock
72	79MH013	56 09 48	130 59 34	A3	0.05	Snow or Ice
73	79RK014	56 10 29	130 58 10	A3	0.08	Vegetation
74	79MH014	56 12 16	130 58 23	A3	0.06	Snow or Ice
75	79MH015	56 12 53	130 58 32	A3	0.22	Rock
76	79RK015	56 13 01	130 57 25	A3	0.05	Snow or Ice
77	79MH016	56 13 51	130 58 55	A3	0.04	Snow or Ice
78	79JD805	56 13 28	130 55 31	A3	0.06	Snow or Ice
79	79MH017	56 14 38	130 54 38	A3	0.27	Rock
80	79MH018	56 14 54	130 55 52	A3	0.16	Snow or Ice
81	79JD806	56 14 49	130 57 25	A3	0.03	Snow or Ice
82	79RK016	56 15 44	130 55 53	B3	0.26	Rock
83	79JD807	56 12 48	130 48 02	A3	0.46	Snow or Ice
84	79MH019	56 13 45	130 46 20	A3	0.24	Rock
85	79RK017	56 14 46	130 43 54	A3	0.10	Snow or Ice
86	79JD808	56 12 57	130 45 48	A3	0.20	Rock
87	79MH020	56 13 17	130 44 30	A3	0.24	Rock
88	79RK018	56 14 11	130 41 25	A3	0.13	Vegetation
89	79JD809	55 13 00	130 43 18	A3	0.27	Vegetation
90	79MH021	56 13 32	130 43 04	A3	0.16	Rock
91	79JD810	56 11 51	130 45 31	A3	0.21	Vegetation
92	79RK019	56 12 01	130 47 55	A3	0.16	Rock
93	79-6-27	56 05 37	131 05 45	A4	0.19	Vegetation
94	79JD811	56 05 34	131 27 38	A5	0.22	Rock
95	79DM017	56 15 36	130 55 35	B3	0.26	Rock
96	79MH022	56 18 39	130 54 48	B3	0.16	Rock
97	79ER004	56 17 47	130 55 46	B3	0.18	Rock
98	79RK020	56 17 08	130 57 00	B3	0.20	Rock
99	79MH023	56 18 27	130 57 08	B3	0.24	Rock
100	79ER005	56 17 32	130 58 08	B3	0.15	Rock
101	79RK021	56 16 46	130 59 43	B3	0.10	Rock
102	79ER006	56 17 19	130 59 38	B3	0.20	Rock
103	79RK022	56 19 18	130 56 28	B3	0.16	Rock
104	79MH024	56 19 47	130 55 11	B3	0.22	Rock
105	79ER007	56 20 12	130 57 00	B3	0.22	Rock
106	79RK023	56 23 07	130 55 13	B3	0.26	Rock
107	79MH025	56 22 58	130 53 52	B3	0.38	Rock
108	79ER008	56 23 13	130 56 37	B3	0.16	Vegetation
109	79RK024	56 22 11	130 54 33	B3	0.30	Vegetation
110	79JD814	56 04 49	131 27 25	A5	0.09	Vegetation
111	79JD815	55 03 15	131 23 04	A5	0.14	Rock
112	79ER009	56 21 45	130 59 32	B3	0.18	Rock
113	79MH026	56 21 11	130 58 28	B3	0.16	Rock
114	79RK025	56 20 49	130 59 31	B3	0.20	Rock
115	79ER010	56 21 55	131 01 10	B4	0.08	Rock
116	79MH027	56 21 04	131 01 10	B4	0.10	Rock
117	79RK026	56 20 17	131 01 31	B4	0.24	Rock
118	79ER011	56 21 20	131 03 09	B4	0.26	Rock
119	79RK027	56 19 48	131 03 07	B4	0.27	Rock
120	79MH028	56 20 43	131 03 40	B4	0.21	Rock
121	79ER012	56 19 11	131 01 59	B4	0.25	Rock
122	79RK028	56 18 57	131 00 46	B4	0.20	Rock
123	79ER013	56 17 57	131 02 17	B4	0.13	Rock
124	79RK029	56 17 30	130 59 55	B3	0.17	Rock
125	79-6-28	56 05 37	131 05 45	A4	0.17	Vegetation
126	79GJ020	56 16 24	130 53 35	B3	0.15	Rock
127	79JD819	56 13 18	131 00 37	A4	0.23	Rock
128	79ER014	56 11 53	130 59 55	A3	0.12	Vegetation
129	79MH030	56 12 25	131 00 38	A4	0.08	Rock
130	79RK030	56 13 23	131 02 06	A4	0.16	Rock
131	79JD820	56 14 11	131 00 49	A4	0.21	Rock
132	79ER015	56 13 39	131 03 29	A4	0.21	Rock
133	79MH031	56 13 14	131 04 38	A4	0.13	Rock
134	79RK031	56 14 26	131 03 47	A4	0.21	Vegetation
135	79JD821	56 14 58	131 00 49	A4	0.17	Rock
136	79ER016	56 15 58	131 02 04	B4	0.16	Vegetation
137	79MH032	56 13 34	131 05 52	A4	0.15	Vegetation
138	79RK032	56 15 33	131 03 53	B4	0.15	Vegetation
139	79JD822	56 14 52	131 03 12	A4	0.17	Rock
140	79ER017	56 17 08	131 02 00	B4	0.19	Rock

Gamma-Ray Readings

Sequence	Station	Latitude	Longitude	Quad	Reading	Site Type
217	79MH517	56 13 37	130 53 44	A3	0.25	Sand or Gravel
218	79MH518	56 14 52	130 52 34	A3	0.18	Rock
219	79MH519	56 18 43	130 52 19	B3	0.34	Sand or Gravel
220	79MH520	56 16 42	130 55 19	B3	0.20	Sand or Gravel
221	79MH521	56 17 11	130 54 08	B3	0.25	Sand or Gravel
222	79MH522	56 17 10	130 54 15	B3	0.28	Sand or Gravel
223	79GJ517	56 18 27	130 53 21	B3	0.34	Sand or Gravel
224	79GJ518	56 12 45	130 50 49	A3	0.28	Sand or Gravel
225	79GJ519	56 12 22	130 52 18	A3	0.30	Vegetation
226	79GJ520	56 05 12	131 01 42	A4	0.10	Sand or Gravel
227	79-7-03	56 05 37	131 05 45	A4	0.15	Vegetation
228	79GJ027	56 12 22	130 47 53	A3	0.18	Rock
229	79MH038	56 10 57	130 41 57	A3	0.27	Vegetation
230	79ER027	56 11 53	130 38 38	A2	0.18	Vegetation
231	79RK042	56 13 27	130 37 12	A2	0.26	Rock
232	79MH039	56 11 35	130 39 19	A2	0.13	Rock
233	79RK043	56 14 51	130 36 52	A2	0.20	Rock
234	79ER028	56 12 58	130 39 44	A2	0.12	Vegetation
235	79MH041	56 13 50	130 39 12	A2	0.32	Rock
236	79RK044	56 13 49	130 38 00	A2	0.23	Vegetation
237	79ER029	56 12 34	130 37 55	A2	0.17	Rock
238	79MH040	56 12 27	130 40 25	A3	0.22	Vegetation
239	79MH042	56 15 12	130 38 42	B2	0.25	Rock
240	79RK045	56 14 21	130 36 25	A2	0.31	Rock
241	79ER030	56 15 12	130 40 45	A3	0.18	Vegetation
242	79MH043	56 10 52	130 48 40	A3	0.42	Vegetation
243	79RK046	56 10 53	130 51 02	A3	0.18	Vegetation
244	79ER031	56 11 32	130 49 46	A3	0.22	Rock
245	79MH044	56 11 58	130 51 01	A3	0.14	Vegetation
246	79RK047	56 09 53	130 52 33	A3	0.08	Vegetation
247	79ER032	56 13 25	130 48 42	A3	0.15	Vegetation
248	79RK048	56 12 29	130 49 43	A3	0.12	Vegetation
249	79MH045	56 14 27	130 47 13	A3	0.12	Vegetation
250	79ER033	56 13 36	130 51 41	A3	0.08	Vegetation
251	79RK049	56 12 59	130 51 14	A3	0.10	Vegetation
252	79MH046	56 11 26	130 53 20	A3	0.20	Vegetation
253	79ER034	56 09 58	130 53 54	A3	0.26	Vegetation
254	79MH047	56 09 24	130 55 00	A3	0.30	Vegetation
255	79RK050	56 08 26	130 55 40	A3	0.08	Vegetation
256	79MH048	56 09 13	130 55 17	A3	0.35	Sand or Gravel
257	79ER035	56 09 24	130 51 45	A3	0.13	Vegetation
258	79RK051	56 06 47	130 54 54	A3	0.10	Vegetation
259	79MH049	56 08 00	130 53 00	A3	0.14	Vegetation
260	79JD843	56 17 48	130 48 29	A3	0.14	Vegetation
261	79-7-04	56 05 37	131 05 45	A4	0.17	Vegetation
262	79DM025	56 01 26	131 18 21	A4	0.14	Rock
263	79GJ031	56 03 34	131 19 20	A4	0.15	Vegetation
264	79MH050	56 04 12	131 22 01	A3	0.16	Rock
265	79RK052	56 04 59	130 52 32	A3	0.18	Vegetation
266	79JD844	56 04 38	130 53 40	A3	0.20	Rock
267	79ER036	56 04 28	130 55 16	A3	0.16	Rock
268	79RK053	56 05 10	130 54 48	A3	0.18	Vegetation
269	79JD845	56 05 43	130 55 20	A3	0.22	Rock
270	79ER037	56 00 54	130 54 57	A3	0.19	Vegetation
271	79JD846	56 02 22	130 53 29	A3	0.24	Vegetation
272	79RK054	56 03 11	130 52 13	A3	0.14	Vegetation
273	79JD847	56 01 49	130 51 40	A3	0.17	Rock
274	79ER038	56 03 11	130 50 02	A3	0.19	Vegetation
275	79RK055	56 04 10	130 49 59	A3	0.17	Vegetation
276	79ER039	56 03 24	130 48 38	A3	0.25	Rock
277	79JD848	56 03 42	130 51 07	A3	0.07	Vegetation
278	79RK056	56 04 50	130 51 00	A3	0.08	Vegetation
279	79MH053	56 04 11	131 20 27	A5	0.15	Rock
280	79MH054	56 04 23	131 20 25	A5	0.15	Vegetation
281	79RK057	56 00 24	130 52 24	A3	0.16	Vegetation
282	79JD849	56 05 19	130 49 02	A3	0.12	Vegetation
283	79RK058	56 04 27	130 48 04	A3	0.21	Vegetation
284	79ER040	56 05 02	130 47 03	A3	0.18	Rock
285	79JD850	56 06 31	130 49 22	A3	0.18	Vegetation
286	79RK059	56 07 07	130 46 30	A3	0.10	Rock
287	79ER041	56 06 35	130 47 44	A3	0.22	Rock
288	79JD851	56 05 52	130 51 51	A3	0.17	Sand or Gravel
289	79ER042	56 07 22	130 48 52	A3	0.12	Vegetation
290	79RK060	56 07 10	130 50 17	A3	0.16	Rock
291	79JD852	56 06 33	130 51 33	A3	0.16	Rock
292	79ER043	56 08 30	130 50 40	A3	0.10	Vegetation
293	79JD853	56 07 11	130 52 29	A3	0.17	Vegetation
294	79RK061	56 07 54	130 51 06	A3	0.19	Rock
295	79DM027	56 01 21	131 17 37	A4	0.15	Rock
296	79GJ038	56 03 11	131 17 01	A4	0.30	Rock
297	79-7-05	56 05 37	131 05 45	A4	0.14	Vegetation
298	79JD854	56 10 47	130 36 00	A2	0.10	Vegetation
299	79DM035	56 18 11	130 43 14	B3	0.22	Rock
300	79MH056	56 09 17	130 48 59	A3	0.10	Vegetation
301	79ER044	56 08 33	130 47 44	A3	0.25	Rock
302	79RK062	56 08 30	130 46 27	A3	0.29	Rock
303	79MH057	56 09 29	130 46 05	A3	0.22	Rock
304	79ER045	56 10 08	130 45 07	A3	0.24	Rock
305	79RK063	56 09 42	130 44 19	A3	0.24	Rock
306	79MH058	56 10 06	130 43 02	A3	0.18	Rock
307	79ER046	56 10 25	130 40 13	A3	0.32	Rock
308	79RK064	56 10 12	130 41 01	A3	0.42	Rock
309	79ER047	56 12 27	130 33 32	A2	0.26	Rock
310	79MH059	56 13 35	130 33 12	A2	0.32	Rock
311	79RK065	56 15 51	130 33 22	B2	0.26	Rock
312	79JD858	56 10 02	130 36 26	A2	0.31	Rock
313	79JD859	56 09 01	130 36 53	A2	0.18	Rock
314	79GJ041	56 18 14	130 44 06	B3	0.30	Rock
315	79GJ042	56 18 18	130 44 17	B3	0.29	Rock
316	79MH060	56 14 31	130 34 45	A2	0.25	Vegetation
317	79ER048	56 13 28	130 35 24	A2	0.32	Rock
318	79RK066	56 15 30	130 36 04	B2	0.30	Rock
319	79MH061	56 16 08	130 37 11	B2	0.24	Rock
320	79ER049	56 16 44	130 39 52	B2	0.28	Rock
321	79RK067	56 17 41	130 40 50	B3	0.28	Rock
322	79MH062	56 18 34	130 42 50	B3	0.20	Rock
323	79ER051	56 16 47	130 43 23	B3	0.28	Rock
324	79RK068	56 15 56	130 42 11	B3	0.18	Rock
325	79JD860	56 08 44	130 37 07	A2	0.20	Rock
326	79JD861	56 15 38	130 45 06	B3	0.08	Vegetation
327	79ER050	56 17 21	130 41 57	B3	0.25	Rock
328	79MH063	56 19 25	130 44 11	A3	0.24	Rock
329	79RK069	56 16 27	130 41 10	B3	0.06	Rock
330	79ER052	56 17 30	130 44 58	B3	0.23	Rock
331	79JD862	56 18 23	130 45 22	B3	0.25	Rock
332	79MH064	56 20 22	130 47 05	B3	0.16	Vegetation
334	79JD863	56 21 10	130 46 13	B3	0.42	Rock
335	79ER053	56 22 02	130 46 47	B3	0.20	Rock
336	79RK070	56 15 25	130 43 20	B3	0.25	Vegetation
337	79RK071	56 20 24	130 49 49	B3	0.36	Rock
338	79ER054	56 21 08	130 48 10	B3	0.40	Rock
339	79DM040	56 16 16	130 44 48	B3	0.17	Vegetation
340	79-7-06	56 05 37	131 05 45	A4	0.17	Vegetation
341	79MH065	56 11 54	131 08 39	A4	0.17	Vegetation
342	79JD864	56 13 23	131 08 11	A4	0.12	Vegetation
343	79RK072	56 14 52	131 06 30	A4	0.18	Vegetation
344	79MH066	56 15 07	131 10 38	B4	0.20	Rock
345	79JD865	56 16 07	131 12 28	B4	0.14	Rock
346	79RK073	56 15 34	131 09 31	B4	0.16	Rock
347	79MH067	56 16 45	131 12 08	B4	0.12	Rock
348	79JD866	56 15 14	131 13 31	B4	0.14	Vegetation
349	79RK074	56 16 13	131 13 48	B4	0.18	Rock
350	79JD867	56 17 27	131 14 12	B4	0.08	Vegetation
351	79MH068	56 17 22	131 12 12	B4	0.20	Rock
352	79RK075	56 18 04	131 10 47	B4	0.18	Vegetation
353	79JD868	56 19 17	131 09 28	B4	0.20	Rock
354	79MH069	56 18 22	131 15 05	B4	0.11	Rock
355	79JD869	56 17 19	131 16 44	B4	0.18	Rock
356	79RK076	56 16 38	131 18 00	B4	0.16	Rock

Gamma-Ray Readings

Sequence	Station	Latitude	Longitude	Quad	Reading	Site Type
434	79RK091	56 19 19	130 46 24	B3	0.19	Sand or Gravel
435	79MH081	56 16 46	130 49 02	B3	0.18	Vegetation
436	79RK092	56 15 28	130 47 17	B3	0.14	Sand or Gravel
437	79MH082	56 16 03	130 51 01	B3	0.17	Vegetation
438	79ER063	56 15 24	130 49 07	B3	0.24	Sand or Gravel
439	79-7-10	56 05 37	131 05 45	A4	0.17	Vegetation
440	79GJ058	56 02 12	131 17 52	A4	0.17	Rock
441	79JD881	56 02 31	131 20 22	A5	0.25	Rock
442	79ER064	56 02 45	131 21 40	A5	0.15	Rock
443	79GJ059	56 03 40	131 22 20	A5	0.14	Rock
444	79JD882	56 05 14	131 25 33	A5	0.14	Rock
445	79GJ060	56 04 49	131 22 40	A5	0.18	Rock
446	79ER065	56 05 19	131 24 12	A5	0.20	Rock
447	79JD883	56 07 30	131 26 02	A5	0.14	Rock
448	79ER066	56 06 51	131 24 03	A5	0.25	Rock
449	79GJ061	56 06 48	131 25 09	A5	0.18	Vegetation
450	79JD884	56 06 05	131 23 39	A5	0.13	Rock
451	79GJ062	56 06 30	131 22 20	A5	0.13	Rock
452	79ER067	56 05 18	131 18 48	A4	0.28	Rock
453	79JD885	56 05 25	131 21 12	A5	0.16	Rock
454	79GJ063	56 05 48	131 18 01	A4	0.40	Rock
455	79MH083	56 06 03	131 13 06	A4	0.10	Rock
456	79RK093	56 06 30	131 11 49	A4	0.24	Rock
457	79GJ064	56 04 21	131 18 12	A4	0.16	Rock
458	79JD886	56 04 18	131 17 12	A4	0.28	Rock
459	79ER068	56 05 27	131 11 32	A4	0.19	Rock
460	79MH084	56 07 22	131 10 50	A4	0.30	Rock
461	79GJ065	56 04 37	131 10 12	A4	0.16	Rock
462	79ER069	56 05 12	131 08 56	A4	0.16	Rock
463	79JD887	56 01 01	131 16 04	A4	0.26	Rock
464	79RK094	56 05 15	131.15 51	A4	0.20	Rock
465	79MH085	56 07 11	131 09 18	A4	0.22	Rock
466	79GJ066	56 05 33	131 07 31	B4	0.16	Vegetation
467	79GJ067	56 02 28	131 12 41	A4	0.23	Sand or Gravel
468	79JD888	56 03 10	131 14 59	A4	0.14	Vegetation
469	79RK095	56 04 35	131 14 54	A4	0.21	Vegetation
470	79GJ068	56 04 57	131 12 58	A4	0.31	Rock
471	79MH086	56 05 45	131 14 39	A4	0.26	Rock
472	79JD889	56 03 43	131 12 35	A4	0.08	Vegetation
473	79RK096	56 04 03	131 11 42	A4	0.17	Vegetation
474	79MH087	56 03 00	131 09 53	A4	0.07	Vegetation
475	79RK098	56 06 18	131 05 22	A4	0.09	Vegetation
476	79JD890	56 04 35	131 07 11	A4	0.08	Vegetation
477	79MH088	56 07 44	131 08 39	A4	0.19	Vegetation
478	79GJ069	56 06 32	131 08 42	A4	0.14	Vegetation
479	79-7-11	56 05 37	131 05 45	A4	0.15	Vegetation
480	79DM052	56 23 34	131 01 14	B4	0.26	Rock
481	79MH089	56 23 21	130 58 38	B3	0.18	Rock
482	79RK099	56 23 46	130 59 28	B3	0.23	Rock
483	79DM053	56 23 56	131 03 20	B4	0.18	Rock
484	79MH090	56 24 26	131 05 30	B4	0.10	Rock
485	79RK100	56 22 32	131 04 13	B4	0.11	Vegetation
486	79DM054	56 23 38	131 05 50	B4	0.12	Rock
487	79MH091	56 23 13	131 04 53	B4	0.08	Rock
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495	79JD892	56 19 53	131 06 25	B4	0.30	Rock
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498	79RK104	56 19 56	131 10 12	B4	0.34	Rock
499	79JD893	56 20 50	131 12 28	B4	0.19	Rock
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502	79RK105	56 20 31	131 15 48	B4	0.18	Rock
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505	79GJ075	56 23 27	131 10 05	B4	0.08	Rock
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507	79MH093	56 19 35	131 16 20	B4	0.27	Rock
508	79ER073	56 22 46	131 12 52	B4	0.22	Rock
509	79RK106	56 23 07	131 11 36	B4	0.12	Rock
510	79JD896	56 19 18	131 18 31	B4	0.21	Rock
511	79GJ076	56 19 53	131 18 02	B4	0.15	Rock
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513	79GJ538	56 13 59	130 56 31	A3	0.28	Sand or Gravel
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515	79GJ540	56 14 21	130 48 19	A3	0.26	Sand or Gravel
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517	79GJ542	56 10 37	130 49 41	A3	0.05	Vegetation
518	79GJ543	56 07 47	130 46 41	A3	0.34	Rock
519	79GJ544	56 07 50	130 46 48	A3	0.28	Vegetation
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522	79GJ547	56 07 59	130 49 10	A3	0.25	Sand or Gravel
523	79GJ548	56 08 32	130 52 25	A3	0.07	Vegetation
524	79GJ549	56 00 48	131 05 05	A4	0.18	Sand or Gravel
525	79GJ550	56 04 43	131 08 30	A4	0.08	Vegetation
526	79RK107	56 22 50	131 16 56	B4	0.20	Rock
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529	79MH095	56 22 40	131 18 47	B4	0.19	Vegetation
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531	79GJ077	56 20 52	131 17 02	B4	0.14	Rock
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534	79GJ079	56 22 13	131 17 35	B4	0.10	Vegetation
535	79-7-12	56 05 37	131 05 45	A4	0.15	Vegetation
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539	79DM535	56 20 18	130 45 12	B4	0.44	Sand or Gravel
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541	79MH524	56 17 37	130 45 38	B3	0.27	Rock
543	79MH529	56 15 03	130 45 40	B3	0.36	Sand or Gravel
544	79MH531	56 15 40	130 46 48	B3	0.33	Sand or Gravel
545	79MH532	56 05 20	131 05 42	A4	0.24	Sand or Gravel
546	79-7-13	56 05 37	131 05 45	A4	0.15	Vegetation
547	79DM537	56 07 39	131 24 22	A5	0.22	Sand or Gravel
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549	79DM541	56 06 37	131 21 10	A5	0.10	Vegetation
550	79DM542	56 06 27	131 20 12	A5	0.28	Sand or Gravel
551	79DM544	56 06 29	131 18 23	A4	0.19	Sand or Gravel
552	79DM545	56 08 39	131 21 06	A5	0.29	Sand or Gravel
553	79DM546	56 09 32	131 19 30	A4	0.28	Sand or Gravel
554	79DM547	56 09 19	131 18 28	A4	0.31	Sand or Gravel
555	79DM548	56 10 52	131 16 59	A4	0.36	Sand or Gravel
556	79DM549	56 11 23	131 16 24	A4	0.30	Sand or Gravel
557	79DM550	56 09 24	131 16 51	A4	0.25	Sand or Gravel
558	79DM551	56 09 04	131 16 35	A4	0.28	Rock
559	79DM552	56 08 42	131 14 48	A4	0.19	Vegetation
560	79DM554	56 08 13	131 18 05	A4	0.15	Vegetation
561	79DM555	56 08 28	131 16 33	A4	0.08	Vegetation
562	79DM556	56 08 17	131 16 59	A4	0.07	Vegetation
563	79DM557	56 07 52	131 16 32	A4	0.10	Vegetation
564	79DM558	56 07 02	131 16 26	A4	0.09	Vegetation
565	79RK845	56 05 20	131 18 04	A4	0.25	Sand or Gravel
566	79RK846	56 04 45	131 21 31	A5	0.15	Sand or Gravel
567	79RK847	56 05 43	131 20 02	A5	0.30	Sand or Gravel
568	79RK848	56 07 30	131 14 19	A4	0.25	Vegetation
569	79RK849	56 07 06	131 15 41	A4	0.10	Vegetation
570	79RK850	56 06 35	131 13 12	A4	0.19	Vegetation
571	79RK851	56 05 43	131 12 17	A4	0.09	Vegetation
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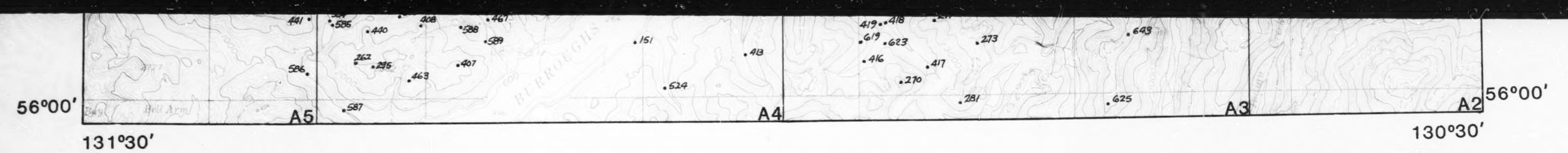
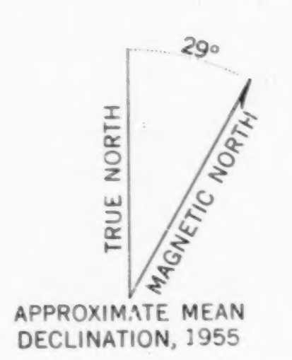
573	79RK853	56 02 33	131 16 29	A4	0.12	Vegetation

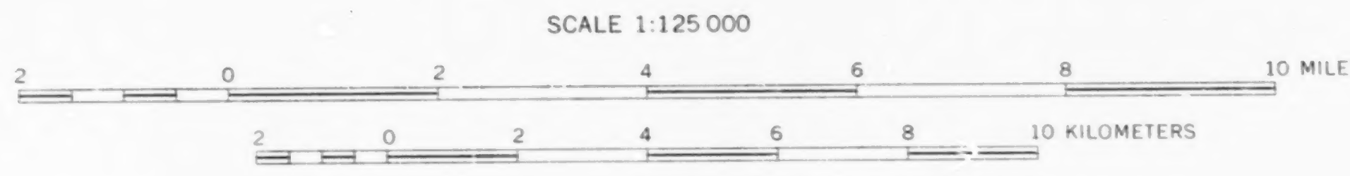


Base from USGS 1:250,000 topo series:
Bradfield Canal, 1955, ALASKA-CANADA.

LOCATIONS OF GAMMA-RAY READING SITES



APPROXIMATE MEAN DECLINATION, 1955



CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

Discussion

Introduction

A survey of total gamma radiation intensities at ground sites throughout the central portion of the Bradfield Canal quadrangle was conducted during June and July of 1979. This sheet contains a list of the data collected and a map showing the locations of sites where readings were made. The accompanying sheet contains maps showing the distribution of relatively high gamma-ray intensity readings.

The study area is underlain by a variety of calc-alkaline granitic plutons, and medium- and high-grade schists and gneisses characteristic of the Coast Plutonic Complex. The rugged, mountainous terrain consists of jagged peaks to 2100 m elevation and steep-walled canyons carved by roaring rivers and still-active alpine glaciers. Because of current and recent glaciation, and rapid stream erosion, many rock outcrops and much stream-sediment is little affected by chemical weathering. High levels of precipitation fall year-round.

Procedure

Gamma-ray intensities were measured with a portable scintillometer, GeoMetrics model GR-101A, serial number 04039. This unit has a 38mm by 38mm (43 cubic cm) NaI crystal detector and measures the total count for gamma radiation with energy levels above 0.05 MeV. The scintillometer was placed in the center of the front floor area of a Hughes 500C helicopter, where it was approximately 0.8m above ground level when the helicopter rested on a smooth site. At this height, the area of main influence on the reading lies within a circle of radius about 5 to 10 m (see Lovborg, 1973, and Hanson, 1975). The detector location was about 50 cm forward of the helicopter's fuel tank.

Readings of gamma radiation intensity were made at most helicopter landing sites during the course of geologic mapping and stream-sediment sampling of the area. After landing at a site, the station number, instrument scale range, radiation reading, and site type (see below) were recorded; usually by the helicopter pilot (Rossiter). The first reading for each day was made at the helicopter landing site in our base camp, a flat area of dense, tall grass in the center of the Eu Lachon River valley (site number 1). Repeated readings at this site provided a crude check for long-term instrumental variation.

Data

Data for 620 sites, plus 22 readings made at the base station, are contained in the data table. A sequence number, from 1 to 646, indicates the order in which readings were made. The data, including base station readings, are listed chronologically to permit inspection for instrumental drift or other time-dependent variation. Four sequence numbers (159, 333, 433, and 542) have no data and are omitted from the table. Two readings (sequence numbers 58 and 59) were made while reoccupying stations first visited during 1978. Data for these two sites are included in the table but they lie outside the area of the maps in this report and are not plotted.

The 7-character station numbers correspond to those used to identify collection locations for geochemically analyzed samples (Koch and others, 1980a,b,c, Koch, O'Leary, and Risoli, 1980). For base station readings, the station number is replaced in the table by a date composed of numbers indicating the year, month, and day on which that reading was made. Latitude and longitude coordinates are given as degrees, minutes, and seconds. Quadrangle designations refer to the 1:63,360 scale quadrangles.

Gamma radiation intensity readings are listed exactly as recorded in the field. All measurements were made with the scintillometer range selector set at 0.1K. The meter was not checked or calibrated with a radiation source of known intensity but multiplication of the readings by 100 will give an approximate value of counts per second. No attempt was made to compensate for instrumental drift because it, as estimated from repeated base station readings, appears insignificant. The data were not corrected for diurnal variations, weather fluctuations, or atmospheric radon or cosmic radiation as their effects probably have little influence on most readings (see section on snow and ice sites on sheet 2).

Histograms of the readings (see sheet 2) have a markedly uneven, saw-tooth character, with adjacent bars commonly being significantly different in height. This pattern resulted from the way values were read and recorded. The scintillometer readout scale is marked only with even numbered divisions (.02, .04, .06, etc.). In the field, people tended to record the value of the nearest marked scale division more often than they recorded the number associated with an unmarked value. The difference between values rounded to the nearest marked scale division, and those not so rounded, is insignificant compared to the total range of values and the effects of other sources of variation.

Location Map

Locations of sites where scintillometer readings were made are indicated by dots on the location map on this sheet. The dots are labelled with the sequence number for that reading. The base station location is labelled number 1. The outline of each 1:63,360 scale quadrangle is indicated, along with its quadrangle designation (A3, B4, etc.).

Factors Affecting Gamma-Ray Readings

Cosmic rays probably exerted little influence on measurements made in this study because the detector was close to the ground while measurements were being made. Other atmospheric sources of gamma rays (mainly radon gas) were probably homogenized by the strong breezes common to this mountainous region, and flushed from the air by frequent rain. During the 24 days between the first and last days on which gamma-ray measurements were made, only 9 days had no appreciable rain during the day, with a maximum of 3 such days in a row. Even when it didn't rain during the day, there was often rain at night. Rock and gravel areas were usually wet and vegetated areas (soil areas actually consist largely of decayed vegetation) never dried out

Site Type

At the time each reading was made, the site was classified as rock, gravel, vegetated, or snow and ice to indicate the dominant type of ground surface close to the detector. Sites vary in the type and amount of cover material and the amount of gamma-ray absorption occurring in that cover material. Essentially all gamma radiation is absorbed by a layer of rock about 30 cm thick, of soil about 45 to 60 cm thick, or about 100 cm of water. This means that readings at rock outcrop sites are influenced by rock only to a depth of about 30 cm. Radiation from unconsolidated sediment may reflect the bedrock under that site if the sediment cover is thin or if the sediment was locally derived. Most gravel sites are stream beds where the sediment depth exceeds 60 cm and thus the sediment constitutes the only significant contributing factor influencing the reading. The majority of these streams in which landings were made are short and the sediment was derived from an area extending no more than 1 to 2 km upstream. Vegetated sites have cover usually consisting of dense moss, lichen, and heather mats, or are thick, swampy muskegs composed mainly of living and decaying plant material. These areas often are nearly water-saturated and, depending on thickness, may effectively absorb gamma radiation from underlying sediment or rock. Snow absorbs gamma rays more effectively as its water content (density) increases. Thin snow cover is reported to act as a radon gas trap in some cases, increasing gamma-ray intensity. This effect was not noted in the study area. Gamma-ray readings for snow-covered areas are conspicuously lower than those from other site types.

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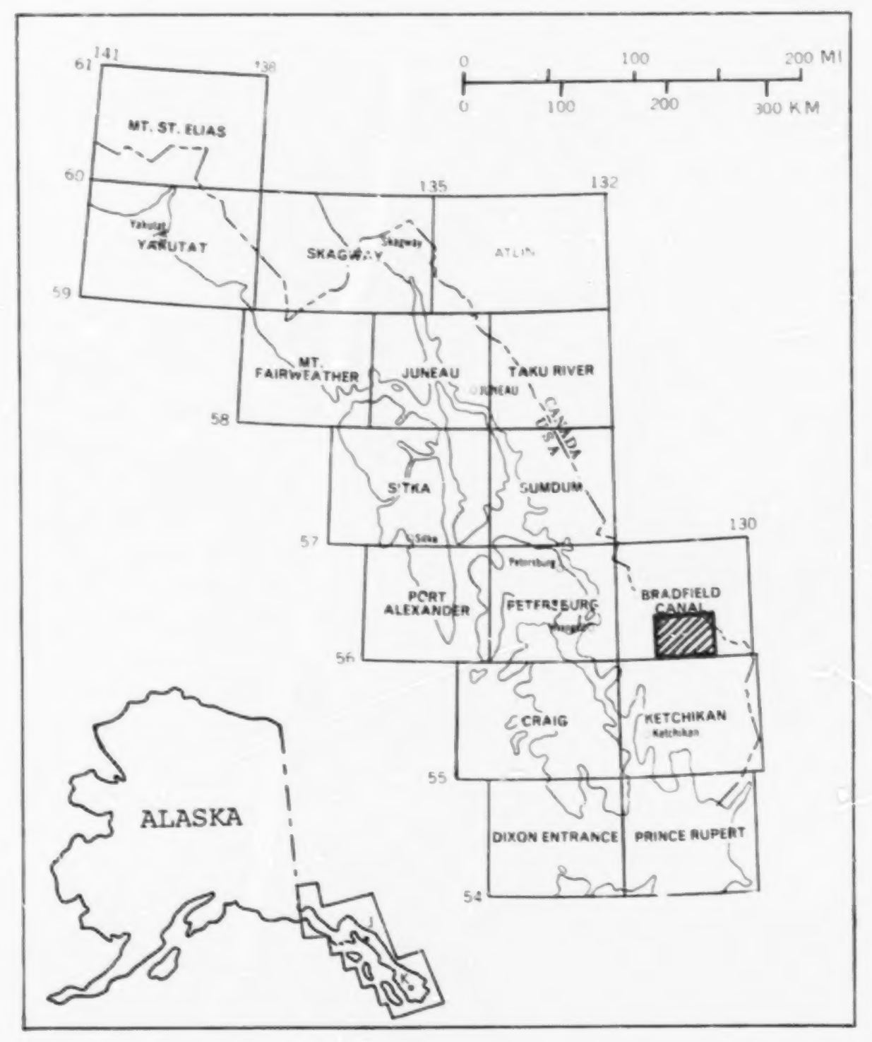

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90	79MH021	56 13 32	130 43 04	A3	0.16	Rock
91	79JD810	56 11 51	130 45 31	A3	0.21	Vegetation
92	79RK019	56 12 01	130 47 55	A3	0.16	Rock
93	79-6-27	56 05 37	131 05 45	A4	0.19	Vegetation
94	79JD811	56 05 34	131 27 38	A5	0.22	Rock
95	79DM017	56 15 36	130 55 35	B3	0.26	Rock
96	79MH022	56 18 39	130 54 48	B3	0.16	Rock
97	79ER004	56 17 47	130 55 46	B3	0.18	Rock
98	79RK020	56 17 08	130 57 00	B3	0.20	Rock
99	79MH023	56 18 27	130 57 08	B3	0.24	Rock
100	79ER005	56 17 32	130 58 08	B3	0.15	Rock
101	79RK021	56 16 46	130 59 43	B3	0.10	Rock
102	79ER006	56 17 19	130 59 38	B3	0.20	Rock
103	79RK022	56 19 18	130 56 28	B3	0.16	Rock
104	79MH024	56 19 47	130 55 11	B3	0.22	Rock
105	79ER007	56 20 12	130 57 00	B3	0.22	Rock
106	79RK023	56 23 07	130 55 13	B3	0.26	Rock
107	79MH025	56 22 58	130 53 52	B3	0.38	Rock
108	79ER008	56 23 13	130 56 37	B3	0.16	Vegetation
109	79RK024	56 22 11	130 54 33	B3	0.30	Vegetation
110	79JD814	56 04 49	131 27 25	A5	0.09	Vegetation
111	79JD815	56 03 15	131 23 04	A5	0.14	Rock
112	79ER009	56 21 45	130 59 32	B3	0.18	Rock
113	79MH026	56 21 11	130 58 28	B3	0.16	Rock
114	79RK025	56 20 49	130 59 31	B3	0.20	Rock
115	79ER010	56 21 55	131 01 10	B4	0.08	Rock
116	79MH027	56 21 04	131 01 10	B4	0.10	Rock
117	79RK026	56 20 17	131 01 31	B4	0.24	Rock
118	79ER011	56 21 20	131 03 09	B4	0.26	Rock
119	79RK027	56 19 48	131 03 07	B4	0.27	Rock
120	79MH028	56 20 43	131 03 40	B4	0.21	Rock
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122	79RK028	56 18 57	131 00 46	B4	0.20	Rock
123	79ER013	56 17 57	131 02 17	B4	0.13	Rock
124	79RK029	56 17 30	130 59 55	B3	0.17	Rock
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131	79JD820	56 14 11	131 00 49	A4	0.21	Rock
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134	79RK031	56 14 26	131 03 47	A4	0.21	Vegetation
135	79JD821	56 14 58	131 00 49	A4	0.17	Rock
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142	79MH034	56 16 50	131 03 56	B4	0.04	Rock
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144	79JD823	56 17 31	131 01 23	B4	0.22	Rock
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147	79RK034	56 17 54	131 05 23	B4	0.21	Rock
148	79ER019	56 19 41	131 05 17	B4	0.25	Rock
149	79MH036	56 18 55	131 06 55	B4	0.30	Rock
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151	79JD829	56 01 54	131 06 21	B4	0.30	Rock
152	79ER020	56 18 25	131 08 31	B4	0.20	Rock
153	79RK036	56 16 44	131 07 34	B4	0.14	Rock
154	79MH037	56 15 32	131 08 00	B4	0.30	Rock
155	79ER021	56 14 45	131 08 05	A4	0.12	Rock
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164	79DM507	56 12 28	131 01 33	A4	0.28	Sand or Gravel
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169	79DM512	56 09 39	130 57 40	A3	0.12	Vegetation
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171	79RK820	56 09 26	131 04 51	A4	0.14	Snow or Ice
172	79RK821	56 09 49	131 04 32	A4	0.13	Vegetation
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177	79DM514	56 08 52	131 03 22	A4	0.15	Vegetation
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194	79DM523	56 19 54	130 53 52	B3	0.36	Sand or Gravel
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196	79RK825	56 22 08	131 03 10	B4	0.30	Sand or Gravel
197	79RK826	56 22 08	131 03 00	B4	0.35	Sand or Gravel
198	79RK827	56 22 33	131 02 20	B4	0.25	Sand or Gravel
199	79RK828	56 22 30	131 01 54	B4	0.27	Sand or Gravel
200	79RK829	56 22 48	131 01 25	B4	0.27	Sand or Gravel
201	79RK830	56 22 58	131 00 57	B4	0.32	Sand or Gravel
202	79RK831	56 22 51	131 00 19	B4	0.31	Sand or Gravel
203	79RK832	56 22 49	130 59 00	B3	0.32	Sand or Gravel
204	79RK833	56 22 44	130 58 53	B3	0.39	Sand or Gravel
205	79RK834	56 22 05	130 57 40	B3	0.34	Sand or Gravel
206	79RK835	56 17 43	131 00 31	B4	0.29	Sand or Gravel
207	79RK837	56 18 39	130 58 59	B3	0.26	Rock
208	79RK838	56 18 55	130 58 51	B3	0.33	Sand or Gravel
209	79RK839	56 18 52	130 58 48	B3	0.31	Sand or Gravel
210	79RK840	56 19 31	130 58 11	B3	0.33	Sand or Gravel
211	79RK841	56 20 06	130 58 05	B3	0.44	Sand or Gravel
212	79RK842	56 21 08	130 56 45	B3	0.40	Sand or Gravel
213	79RK843	56 18 37	130 55 35	B3	0.30	Sand or Gravel
214	79-7-02	56 05 37	131 05 45	A4	0.16	Vegetation
215	79GJ516	56 09 07	130 53 52	A3	0.25	Sand or Gravel
216	79MH516	56 10 00	130 53 41	A3	0.14	Vegetation
305	79RK063	56 09 42	130 44 19	A3	0.24	Rock
306	79MH058	56 10 06	130 43 02	A3	0.18	Rock
307	79ER046	56 10 25	130 40 13	A3	0.32	Rock
308	79RK064	56 10 12	130 41 01	A3	0.42	Rock
309	79ER047	56 12 27	130 33 32	A2	0.26	Rock
310	79MH059	56 13 35	130 33 12	A2	0.32	Rock
311	79RK065	56 15 51	130 33 22	B2	0.26	Rock
312	79JD858	56 10 02	130 36 26	A2	0.31	Rock
313	79JD859	56 09 01	130 36 53	A2	0.18	Rock
314	79GJ041	56 18 14	130 44 06	B3	0.30	Rock
315	79GJ042	56 18 18	130 44 17	B3	0.29	Rock
316	79MH060	56 14 31	130 34 45	A2	0.25	Vegetation
317	79ER048	56 13 28	130 35 24	A2	0.32	Rock
318	79RK066	56 15 30	130 36 04	B2	0.30	Rock
319	79MH061	56 16 08	130 37 11	B2	0.24	Rock
320	79ER049	56 16 44	130 39 52	B2	0.28	Rock
321	79RK067	56 17 41	130 40 50	B3	0.28	Rock
322	79MH062	56 18 34	130 42 50	B3	0.20	Rock
323	79ER051	56 16 47	130 43 23	B3	0.28	Rock
324	79RK068	56 15 56	130 42 11	B3	0.18	Rock
325	79JD860	56 08 44	130 37 07	A2	0.20	Rock
326	79JD861	56 15 38	130 45 06	B3	0.08	Vegetation
327	79ER050	56 17 21	130 41 57	B3	0.25	Rock
328	79MH063	56 19 25	130 44 11	A3	0.24	Rock
329	79RK069	56 16 27	130 41 10	B3	0.06	Rock
330	79ER052	56 17 30	130 44 58	B3	0.23	Rock
331	79JD862	56 18 23	130 45 22	B3	0.25	Rock
332	79MH064	56 20 22	130 47 05	B3	0.16	Vegetation
334	79JD863	56 21 10	130 46 13	B3	0.42	Rock
335	79ER053	56 22 02	130 46 47	B3	0.20	Rock
336	79RK070	56 15 25	130 43 20	B3	0.25	Vegetation
337	79RK071	56 20 24	130 49 49	B3	0.36	Rock
338	79ER054	56 21 08	130 48 10	B3	0.40	Rock
339	79DM040	56 16 16	130 44 48	B3	0.17	Vegetation
340	79-7-06	56 05 37	131 05 45	A4	0.17	Vegetation
341	79MH065	56 11 54	131 08 39	A4	0.17	Vegetation
342	79JD864	56 13 23	131 08 11	A4	0.12	Vegetation
343	79RK072	56 14 52	131 06 30	A4	0.18	Vegetation
344	79MH066	56 15 07	131 10 38	B4	0.20	Rock
345	79JD865	56 16 07	131 12 28	B4	0.14	Rock
346	79RK073	56 15 34	131 09 31	B4	0.16	Rock
347	79MH067	56 16 45	131 12 08	B4	0.12	Rock
348	79JD866	56 15 14	131 13 31	B4	0.14	Vegetation
349	79RK074	56 16 13	131 13 48	B4	0.18	Rock
350	79JD867	56 17 27	131 14 12	B4	0.08	Vegetation
351	79MH068	56 17 22	131 12 12	B4	0.20	Rock
352	79RK075	56 18 04	131 10 47	B4	0.18	Vegetation
353	79JD868	56 19 17	131 09 28	B4	0.20	Rock
354	79MH069	56 18 22	131 15 05	B4	0.11	Rock
355	79JD869	56 17 19	131 16 44	B4	0.18	Rock
356	79RK076	56 16 38	131 18 00	B4	0.16	Rock
357	79MH070	56 17 17	131 19 40	B4	0.30	Rock
358	79JD870	56 18 33	131 17 18	B4	0.28	Rock
359	79JD871	56 14 37	131 18 25	A4	0.17	Rock
360	79MH071	56 15 45	131 17 00	B4	0.12	Rock
361	79RK078	56 15 05	131 15 27	B4	0.07	Vegetation
362	79GJ047	56 15 35	130 53 18	B3	0.15	Vegetation
363	79DM041	56 17 17	130 51 50	B3	0.18	Vegetation
364	79RK079	56 18 07	130 51 50	B3	0.16	Vegetation
365	79GJ048	56 20 23	130 51 40	B3	0.20	Vegetation
366	79RK080	56 19 07	130 53 51	B3	0.14	Rock
367	79DM042	56 18 37	130 50 50	B3	0.22	Rock
368	79DM043	56 21 22	130 53 28	B3	0.20	Vegetation
369	79RK081	56 20 29	130 53 02	B3	0.20	Vegetation
370	79GJ049	56 20 29	130 55 26	B3	0.35	Rock
371	79DM044	56 20 59	130 51 27	B3	0.32	Rock
372	79GJ050	56 22 33	130 57 12	B3	0.09	Vegetation
373	79GJ051	56 17 12	130 55 08	B3	0.10	Rock
374	79RK083	56 16 26	130 56 20	B3	0.22	Rock
375	79-7-08	56 05 37	131 05 45	A4	0.16	Vegetation
376	79JD873	56 09 21	131 12 01	A4	0.22	Vegetation
377	79DM045	56 10 39	131 11 49	A4	0.09	Vegetation
378	79RK084	56 09 45	131 13 00	A4	0.16	Rock
379	79JD874	56 10 35	131 13 18	A4	0.20	Rock
380	79DM046	56 11 03	131 12 32	A4	0.16	Rock
381	79RK085	56 10 38	131 14 21	A4	0.16	Rock
382	79DM047	56 11 32	131 14 55	A4	0.15	Sand or Gravel
383	79JD875	56 12 11	131 14 57	A4	0.18	Rock
384	79RK086	56 12 12	131 16 15	A4	0.19	Rock
385	79JD876	56 11 42	131 17 19	A4	0.17	Rock
386	79DM048	56 11 24	131 18 50	A4	0.20	Rock
387	79JD877	56 11 18	131 16 42	A4	0.23	Rock
388	79RK087	56 10 27	131 18 50	A4	0.25	Vegetation
389	79DM049	56 09 54	131 17 44	A4	0.10	Vegetation
390	79JD878	56 10 02	131 15 12	A4	0.11	Rock
391	79RK088	56 09 38	131 14 28	A4	0.14	Vegetation
392	79DM050	56 09 10	131 15 14	A4	0.22	Rock
393	79JD879	56 09 01	131 13 36	A4	0.28	Rock
394	79RK089	56 08 25	131 13 09	A4	0.24	Rock
395	79DM051	56 08 04	131 14 38	A4	0.18	Vegetation
396	79JD880	56 07 14	131 12 47	A4	0.18	Rock
397	79GJ052	56 07 10	131 18 00	A4	0.20	Rock
398	79MH072	56 07 02	131 20 23	A5	0.15	Vegetation
399	79ER055	56 07 29	131 18 56	A4	0.27	Rock
400	79GJ053	56 08 43	131 18 41	A4	0.16	Vegetation
401	79MH073	56 07 39	131 20 07	A5	0.20	Rock
402	79MH074	56 08 31	131 19 49	A4	0.21	Rock
403	79GJ054	56 07 41	131 15 37	A4	0.20	Rock
404	79ER056	56 07 53	131 20 52	A5	0.25	Rock
405	79MH075	56 06 45	131 15 14	A4	0.08	Vegetation
406	79GJ056	56 02 49	131 11 52	A4	0.07	Vegetation
407	79MH076	56 01 22	131 13 58	A4	0.13	Vegetation
408	79ER058	56 02 19	131 15 33	A4	0.12	Vegetation
409	79GJ057	56 04 15	131 14 00	A4	0.08	Vegetation
410	79MH077	56 03 18	131 16 08	A4	0.12	Vegetation
411	79ER059	56 03 59	131 10 11	A4	0.29	Vegetation
412	79-7-09	56 05 37	131 05 45	A4	0.15	Vegetation
413	79GJ521	56 01 35	131 01 37	A4	0.16	Sand or Gravel
414	79GJ523	56 02 32	130 59 14	A3	0.08	Vegetation
415	79GJ524	56 02 33	130 57 03	A3	0.16	Sand or Gravel
416	79GJ525	56 01 24	130 56 31	A3	0.08	Vegetation
417	79GJ527	56 01 16	130 53 49	A3	0.26	Sand or Gravel
418	79GJ530	56 02 19	130 55 34	A3	0.25	Sand or Gravel
419	79GJ531	56 02 17	130 55 48	A3	0.21	Sand or Gravel
420	79GJ532	56 03 09	130 54 29	A3	0.22	Vegetation
421	79GJ537	56 03 43	130 52 04	A3	0.24	Sand or Gravel
422	79DM524	56 04 22	130 52 12	A3	0.30	Sand or Gravel
423	79DM525	56 05 29	130 49 52	A3	0.08	Vegetation
424	79DM528	56 06 02	130 47 04	A3	0.12	Vegetation
425	79DM527	56 05 38	130 47 16	A3	0.19	Vegetation
426	79DM530	56 04 25	130 48 48	A3	0.09	Vegetation
427	79ER060	56 22 14	130 51 32	B3	0.30	Rock
428	79MH078	56 22 02	130 49 42	B3	0.38	Rock
429	79MH079	56 19 26	130 59 44	B3	0.18	Rock
430	79RK090	56 19 15	130 57 40	B3	0.16	Rock
431	79MH080	56 19 22	130 48 04	B3	0.09	Vegetation
432	79ER061	56 18 33	130 46 39	B3	0.29	Sand or Gravel

TOTAL GAMMA-RAY INTENSITIES AT GROUND STATIONS IN THE BRADFIELD CANAL QUADRANGLE, SOUTHEASTERN ALASKA

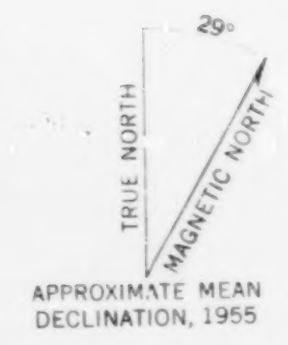
by

R. D. KOCH, R. L. ELLIOTT, AND RICHARD ROSSITER

1981

130°30′

ATIONS OF GAMMA-RAY READING SITES



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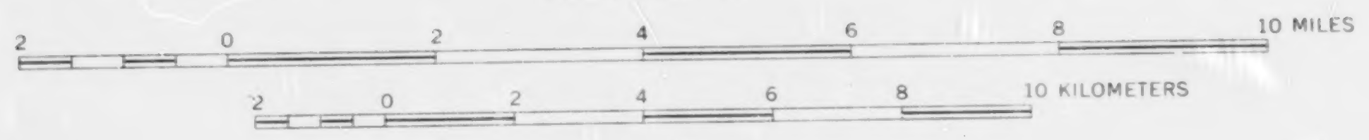

CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

Factors Affecting Gamma-Ray Readings

rays probably exerted little influence on measurements made in because the detector was close to the ground while measurements made. Other atmospheric sources of gamma rays (mainly radon gas) ly homogenized by the strong breezes common to this mountainous flushed from the air by frequent rain. During the 24 days between nd last days on which gamma-ray measurements were made, only 9 days eciable rain during the day, with a maximum of 3 such days in a when it didn't rain during the day, there was often ht. Rock and gravel areas were usually wet and vegetated areas actually consist largely of decayed vegetation) never dried out

time each reading was made, the site was classified as rock, etated, or snow and ice to indicate the dominant type of ground se to the detector. Sites vary in the type and amount of cover d the amount of gamma-ray absorption occurring in that cover Essentially all gamma radiation is absorbed by a layer of rock thick, of soil about 45 to 60 cm thick, or about 100 cm of is means that readings at rock outcrop sites are influenced by rock depth of about 30 cm. Radiation from unconsolidated sediment may bedrock under that site if the sediment cover is thin or if the s locally derived. Most gravel sites are stream beds where the pth exceeds 60 cm and thus the sediment constitutes the only contributing factor influencing the reading. The majority of ms in which landings were made are short and the sediment was m an area extending no more than 1 to 2 km upstream. Vegetated cover usually consisting of dense moss, lichen, and heather mats, k, swampy muskegs composed mainly of living and decaying plant These areas often are nearly water-saturated and, depending on may effectively absorb gamma radiation from underlying sediment or absorbs gamma rays more effectively as its water content (density) Thin snow cover is reported to act as a radon gas trap in some easing gamma-ray intensity. This effect was not noted in the study a-ray readings for snow-covered areas are conspicuously lower than other site types.

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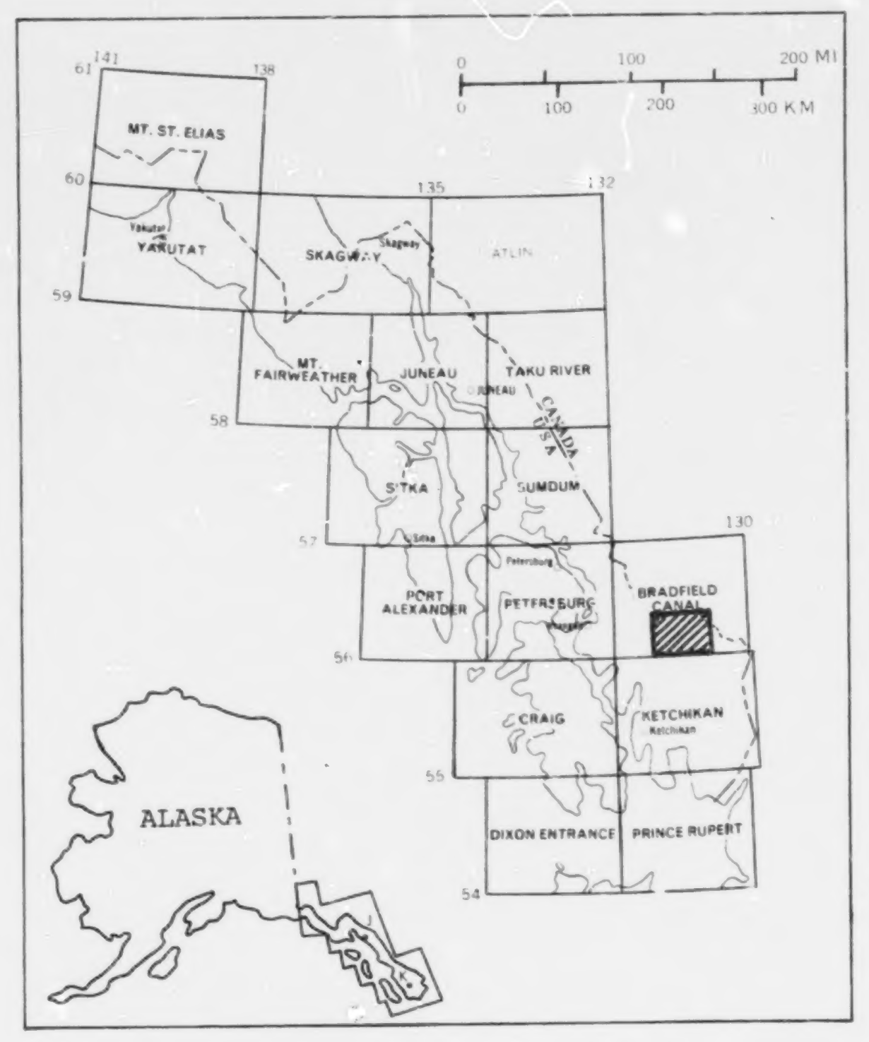

98	79RK020	56 17 08	130 57 08	B3	[illegible]	Rock
99	79MH023	56 18 27	130 57 08	B3	0.24	Rock
100	79ER005	56 17 32	130 58 08	B3	0.15	Rock
101	79RK021	56 16 46	130 59 43	B3	0.10	Rock
102	79ER006	56 17 19	130 59 38	B3	0.20	Rock
103	79RK022	56 19 18	130 56 28	B3	0.16	Rock
104	79MH024	56 19 47	130 55 11	B3	0.22	Rock
105	79ER007	56 20 12	130 57 00	B3	0.22	Rock
106	79RK023	56 23 07	130 55 13	B3	0.26	Rock
107	79MH025	56 22 58	130 53 52	B3	0.38	Rock
108	79ER008	56 23 13	130 56 37	B3	0.16	Vegetation
109	79RK024	56 22 11	130 54 33	B3	0.30	Vegetation
110	79JD814	56 04 49	131 27 25	A5	0.09	Vegetation
111	79JD815	56 03 15	131 23 04	A5	0.14	Rock
112	79ER009	56 21 45	130 59 32	B3	0.18	Rock
113	79MH026	56 21 11	130 58 28	B3	0.16	Rock
114	79RK025	56 20 49	130 59 31	B3	0.20	Rock
115	79ER010	56 21 55	131 01 10	B4	0.08	Rock
116	79MH027	56 21 04	131 01 10	B4	0.10	Rock
117	79RK026	56 20 17	131 01 31	B4	0.24	Rock
118	79ER011	56 21 20	131 03 09	B4	0.26	Rock
119	79RK027	56 19 48	131 03 07	B4	0.27	Rock
120	79MH028	56 20 43	131 03 40	B4	0.21	Rock
121	79ER012	56 19 11	131 01 59	B4	0.25	Rock
122	79RK028	56 18 57	131 00 46	B4	0.20	Rock
123	79ER013	56 17 57	131 02 17	B4	0.13	Rock
124	79RK029	56 17 30	130 59 55	B3	0.17	Rock
125	79-6-28	56 05 37	131 05 45	A4	0.17	Vegetation
126	79GJ020	56 16 24	130 53 35	B3	0.15	Rock
127	79JD819	56 13 18	131 00 37	A4	0.23	Rock
128	79ER014	56 11 53	130 59 55	A3	0.12	Vegetation
129	79MH030	56 12 25	131 00 38	A4	0.08	Rock
130	79RK030	56 13 23	131 02 06	A4	0.16	Rock
131	79JD820	56 14 11	131 00 49	A4	0.21	Rock
132	79ER015	56 13 39	131 03 29	A4	0.21	Rock
133	79MH031	56 13 14	131 04 38	A4	0.13	Rock
134	79RK031	56 14 26	131 03 47	A4	0.21	Vegetation
135	79JD821	56 14 58	131 00 49	A4	0.17	Rock
136	79ER016	56 15 58	131 02 04	B4	0.16	Vegetation
137	79MH032	56 13 34	131 05 52	A4	0.15	Vegetation
138	79RK032	56 15 33	131 03 53	B4	0.15	Vegetation
139	79JD822	56 14 52	131 03 12	A4	0.17	Rock
140	79ER017	56 17 08	131 02 00	B4	0.19	Rock
141	79MH033	56 16 06	131 03 22	B4	0.19	Rock
142	79MH034	56 16 50	131 03 56	B4	0.04	Rock
143	79RK033	56 17 24	131 04 23	B4	0.11	Rock
144	79JD823	56 17 31	131 01 23	B4	0.22	Rock
145	79ER018	56 16 25	131 01 02	B4	0.16	Rock
146	79MH035	56 16 56	131 05 25	B4	0.10	Vegetation
147	79RK034	56 17 54	131 05 23	B4	0.21	Rock
148	79ER019	56 19 41	131 05 17	B4	0.25	Rock
149	79MH036	56 18 55	131 06 55	B4	0.30	Rock
150	79RK035	56 17 39	131 07 56	B4	0.20	Rock
151	79JD829	56 01 54	131 06 21	B4	0.30	Rock
152	79ER020	56 18 25	131 08 31	B4	0.20	Rock
153	79RK036	56 16 44	131 07 34	B4	0.14	Rock
154	79MH037	56 15 32	131 08 00	B4	0.30	Rock
155	79ER021	56 14 45	131 08 05	A4	0.12	Rock
156	79JD825	56 19 25	131 07 55	B4	0.19	Rock
157	79DM020	56 16 54	130 53 08	B3	0.10	Rock
158	79-6-30	56 05 37	131 05 45	A4	0.14	Vegetation
160	79DM501	56 06 13	130 57 13	A3	0.05	Vegetation
161	79DM503	56 05 49	130 53 21	A3	0.08	Vegetation
162	79DM505	56 12 05	130 59 40	A3	0.20	Vegetation
163	79DM506	56 12 02	131 00 03	A4	0.33	Sand or Gravel
164	79DM507	56 12 28	131 01 33	A4	0.28	Sand or Gravel
165	79DM508	56 12 27	131 01 43	A4	0.12	Vegetation
166	79DM509	56 11 29	131 01 05	A4	0.26	Sand or Gravel
167	79DM510	56 11 31	130 58 53	A3	0.24	Sand or Gravel
168	79DM511	56 10 55	130 57 20	A3	0.27	Sand or Gravel
169	79DM512	56 09 39	130 57 40	A3	0.12	Vegetation
170	79RK819	56 08 27	131 03 45	A4	0.16	Vegetation
171	79RK820	56 09 26	131 04 51	A4	0.14	Snow or Ice
172	79RK821	56 09 49	131 04 32	A4	0.13	Vegetation
173	79RK822	56 10 31	131 03 31	A4	0.16	Vegetation
174	79RK823	56 10 47	131 03 41	A4	0.11	Vegetation
175	79RK824	56 10 53	131 03 33	A4	0.13	Vegetation
176	79DM513	56 11 46	131 04 01	A4	0.13	Rock
177	79DM514	56 08 52	131 03 22	A4	0.15	Vegetation
178	79-6-30	56 05 37	131 05 45	A4	0.17	Vegetation
179	79GJ507	56 19 11	130 48 39	B3	0.07	Vegetation
180	79GJ508	56 19 10	130 50 37	B3	0.21	Vegetation
181	79GJ510	56 22 29	130 53 04	B3	0.21	Rock
182	79GJ511	56 22 17	130 52 35	B3	0.19	Rock
183	79GJ513	56 21 39	130 52 02	B3	0.40	Sand or Gravel
184	79GJ514	56 21 15	130 52 11	B3	0.50	Sand or Gravel
185	79GJ515	56 21 01	130 54 40	B3	0.32	Sand or Gravel
186	79DM515	56 21 50	130 56 47	B3	0.32	Sand or Gravel
187	79DM516	56 22 32	130 56 53	B3	0.18	Vegetation
188	79DM517	56 22 34	130 58 08	B3	0.36	Sand or Gravel
189	79DM518	56 21 38	130 57 10	B3	0.34	Sand or Gravel
190	79DM519	56 20 59	130 56 00	B3	0.26	Sand or Gravel
191	79DM520	56 20 53	130 55 48	B3	0.25	Sand or Gravel
192	79DM521	56 20 46	130 55 19	B3	0.25	Sand or Gravel
193	79DM522	56 20 28	130 54 49	B3	0.35	Sand or Gravel
194	79DM523	56 19 54	130 53 52	B3	0.36	Sand or Gravel
195	79-7-01	56 05 37	131 05 45	A4	0.17	Vegetation
196	79RK825	56 22 08	131 03 10	B4	0.30	Sand or Gravel
197	79RK826	56 22 08	131 03 00	B4	0.35	Sand or Gravel
198	79RK827	56 22 33	131 02 20	B4	0.25	Sand or Gravel
199	79RK828	56 22 30	131 01 54	B4	0.27	Sand or Gravel
200	79RK829	56 22 48	131 01 25	B4	0.27	Sand or Gravel
201	79RK830	56 22 58	131 00 57	B4	0.32	Sand or Gravel
202	79RK831	56 22 51	131 00 19	B4	0.31	Sand or Gravel
203	79RK832	56 22 49	130 59 00	B3	0.32	Sand or Gravel
204	79RK833	56 22 44	130 58 53	B3	0.39	Sand or Gravel
205	79RK834	56 22 05	130 57 40	B3	0.34	Sand or Gravel
206	79RK835	56 17 43	131 00 31	B4	0.29	Sand or Gravel
207	79RK837	56 18 39	130 58 59	B3	0.26	Rock
208	79RK838	56 18 55	130 58 51	B3	0.33	Sand or Gravel
209	79RK839	56 18 52	130 58 48	B3	0.31	Sand or Gravel
210	79RK840	56 19 31	130 58 11	B3	0.33	Sand or Gravel
211	79RK841	56 20 06	130 58 05	B3	0.44	Sand or Gravel
212	79RK842	56 21 08	130 56 45	B3	0.40	Sand or Gravel
213	79RK843	56 18 37	130 55 35	B3	0.30	Sand or Gravel
214	79-7-02	56 05 37	131 05 45	A4	0.16	Vegetation
215	79GJ516	56 09 07	130 53 52	A3	0.25	Sand or Gravel
216	79MH516	56 10 00	130 53 41	A3	0.14	Vegetation
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315	79GJ042	56 18 18	130 44 17	B3	0.29	Rock
316	79MH060	56 14 31	130 34 45	A2	0.25	Vegetation
317	79ER048	56 13 28	130 35 24	A2	0.32	Rock
318	79RK066	56 15 30	130 36 04	B2	0.30	Rock
319	79MH061	56 16 08	130 37 11	B2	0.24	Rock
320	79ER049	56 16 44	130 39 52	B2	0.28	Rock
321	79RK067	56 17 41	130 40 50	B3	0.28	Rock
322	79MH062	56 18 34	130 42 50	B3	0.20	Rock
323	79ER051	56 16 47	130 43 23	B3	0.28	Rock
324	79RK068	56 15 56	130 42 11	B3	0.18	Rock
325	79JD860	56 08 44	130 37 07	A2	0.20	Rock
326	79JD861	56 15 38	130 45 06	B3	0.08	Vegetation
327	79ER050	56 17 21	130 41 57	B3	0.25	Rock
328	79MH063	56 19 25	130 44 11	A3	0.24	Rock
329	79RK069	56 16 27	130 41 10	B3	0.06	Rock
330	79ER052	56 17 30	130 44 58	B3	0.23	Rock
331	79JD862	56 18 23	130 45 22	B3	0.25	Rock
332	79MH064	56 20 22	130 47 05	B3	0.16	Vegetation
334	79JD863	56 21 10	130 46 13	B3	0.42	Rock
335	79ER053	56 22 02	130 46 47	B3	0.20	Rock
336	79RK070	56 15 25	130 43 20	B3	0.25	Vegetation
337	79RK071	56 20 24	130 49 49	B3	0.36	Rock
338	79ER054	56 21 08	130 48 10	B3	0.40	Rock
339	79DM040	56 16 16	130 44 48	B3	0.17	Vegetation
340	79-7-06	56 05 37	131 05 45	A4	0.17	Vegetation
341	79MH065	56 11 54	131 08 39	A4	0.17	Vegetation
342	79JD864	56 13 23	131 08 11	A4	0.12	Vegetation
343	79RK072	56 14 52	131 06 30	A4	0.18	Vegetation
344	79MH066	56 15 07	131 10 38	B4	0.20	Rock
345	79JD865	56 16 07	131 12 28	B4	0.14	Rock
346	79RK073	56 15 34	131 09 31	B4	0.16	Rock
347	79MH067	56 16 45	131 12 08	B4	0.12	Rock
348	79JD866	56 15 14	131 13 31	B4	0.14	Vegetation
349	79RK074	56 16 13	131 13 48	B4	0.18	Rock
350	79JD867	56 17 27	131 14 12	B4	0.08	Vegetation
351	79MH068	56 17 22	131 12 12	B4	0.20	Rock
352	79RK075	56 18 04	131 10 47	B4	0.18	Vegetation
353	79JD868	56 19 17	131 09 28	B4	0.20	Rock
354	79MH069	56 18 22	131 15 05	B4	0.11	Rock
355	79JD869	56 17 19	131 16 44	B4	0.18	Rock
356	79RK076	56 16 38	131 18 00	B4	0.16	Rock
357	79MH070	56 17 17	131 19 40	B4	0.30	Rock
358	79JD870	56 18 33	131 17 18	B4	0.28	Rock
359	79JD871	56 14 37	131 18 25	A4	0.17	Rock
360	79MH071	56 15 45	131 17 00	B4	0.12	Rock
361	79RK078	56 15 05	131 15 27	B4	0.07	Vegetation
362	79GJ047	56 15 35	130 53 18	B3	0.15	Vegetation
363	79DM041	56 17 17	130 51 50	B3	0.18	Vegetation
364	79RK079	56 18 07	130 51 50	B3	0.16	Vegetation
365	79GJ048	56 20 23	130 51 40	B3	0.20	Vegetation
366	79RK080	56 19 07	130 53 51	B3	0.14	Rock
367	79DM042	56 18 37	130 50 50	B3	0.22	Rock
368	79DM043	56 21 22	130 53 28	B3	0.20	Vegetation
369	79RK081	56 20 29	130 53 02	B3	0.20	Vegetation
370	79GJ049	56 20 29	130 55 26	B3	0.35	Rock
371	79DM044	56 20 59	130 51 27	B3	0.32	Rock
372	79GJ050	56 22 33	130 57 12	B3	0.09	Vegetation
373	79GJ051	56 17 12	130 55 08	B3	0.10	Rock
374	79RK083	56 16 26	130 56 20	B3	0.22	Rock
375	79-7-08	56 05 37	131 05 45	A4	0.16	Vegetation
376	79JD873	56 09 21	131 12 01	A4	0.22	Vegetation
377	79DM045	56 10 39	131 11 49	A4	0.09	Vegetation
378	79RK084	56 09 45	131 13 00	A4	0.16	Rock
379	79JD874	56 10 35	131 13 18	A4	0.20	Rock
380	79DM046	56 11 03	131 12 32	A4	0.16	Rock
381	79RK085	56 10 38	131 14 21	A4	0.16	Rock
382	79DM047	56 11 32	131 14 55	A4	0.15	Sand or Gravel
383	79JD875	56 12 11	131 14 57	A4	0.18	Rock
384	79RK086	56 12 12	131 16 15	A4	0.19	Rock
385	79JD876	56 11 42	131 17 19	A4	0.17	Rock
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387	79JD877	56 11 18	131 16 42	A4	0.23	Rock
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390	79JD878	56 10 02	131 15 12	A4	0.11	Rock
391	79RK088	56 09 38	131 14 28	A4	0.14	Vegetation
392	79DM050	56 09 10	131 15 14	A4	0.22	Rock
393	79JD879	56 09 01	131 13 36	A4	0.28	Rock
394	79RK089	56 08 25	131 13 09	A4	0.24	Rock
395	79DM051	56 08 04	131 14 38	A4	0.18	Vegetation
396	79JD880	56 07 14	131 12 47	A4	0.18	Rock
397	79GJ052	56 07 10	131 18 00	A4	0.20	Rock
398	79MH072	56 07 02	131 20 23	A5	0.15	Vegetation
399	79ER055	56 07 29	131 18 56	A4	0.27	Rock
400	79GJ053	56 08 43	131 18 41	A4	0.16	Vegetation
401	79MH073	56 07 39	131 20 07	A5	0.20	Rock
402	79MH074	56 08 31	131 19 49	A4	0.21	Rock
403	79GJ054	56 07 41	131 15 37	A4	0.20	Rock
404	79ER056	56 07 53	131 20 52	A5	0.25	Rock
405	79MH075	56 06 45	131 15 14	A4	0.08	Vegetation
406	79GJ056	56 02 49	131 11 52	A4	0.07	Vegetation
407	79MH076	56 01 22	131 13 58	A4	0.13	Vegetation
408	79ER058	56 02 19	131 15 33	A4	0.12	Vegetation
409	79GJ057	56 04 15	131 14 00	A4	0.08	Vegetation
410	79MH077	56 03 18	131 16 08	A4	0.12	Vegetation
411	79ER059	56 03 59	131 10 11	A4	0.29	Vegetation
412	79-7-09	56 05 37	131 05 45	A4	0.15	Vegetation
413	79GJ521	56 01 35	131 01 37	A4	0.16	Sand or Gravel
414	79GJ523	56 02 32	130 59 14	A3	0.08	Vegetation
415	79GJ524	56 02 33	130 57 03	A3	0.16	Sand or Gravel
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417	79GJ527	56 01 16	130 53 49	A3	0.26	Sand or Gravel
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420	79GJ532	56 03 09	130 54 29	A3	0.22	Vegetation
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422	79DM524	56 04 22	130 52 12	A3	0.30	Sand or Gravel
423	79DM525	56 05 29	130 49 52	A3	0.08	Vegetation
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427	79ER060	56 22 14	130 51 32	B3	0.30	Rock
428	79MH078	56 22 02	130 49 42	B3	0.38	Rock
429	79MH079	56 19 26	130 59 44	B3	0.18	Rock
430	79RK090	56 19 15	130 57 40	B3	0.16	Rock
431	79MH080	56 19 22	130 48 04	B3	0.09	Vegetation
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536	79DM531	56 20 43	130 48 34	B3	0.50	Sand or Gravel
537	79DM533	56 20 36	130 47 26	B4	0.46	Sand or Gravel
538	79DM534	56 19 50	130 47 50	B3	0.09	Vegetation
539	79DM535	56 20 18	130 45 12	B4	0.44	Sand or Gravel
540	79MH523	56 17 06	130 46 55	B3	0.24	Sand or Gravel
541	79MH524	56 17 37	130 45 38	B3	0.27	Rock
543	79MH529	56 15 03	130 45 40	B3	0.36	Sand or Gravel
544	79MH531	56 15 40	130 46 48	B3	0.33	Sand or Gravel
545	79MH532	56 05 20	131 05 42	A4	0.24	Sand or Gravel
546	79-7-13	56 05 37	131 05 45	A4	0.15	Vegetation
547	79DM537	56 07 39	131 24 22	A5	0.22	Sand or Gravel
548	79DM539	56 05 39	131 21 59	A5	0.19	Vegetation
549	79DM541	56 06 37	131 21 10	A5	0.10	Vegetation
550	79DM542	56 06 27	131 20 12	A5	0.28	Sand or Gravel
551	79DM544	56 06 29	131 18 23	A4	0.19	Sand or Gravel
552	79DM545	56 08 39	131 21 06	A5	0.29	Sand or Gravel
553	79DM546	56 09 32	131 19 30	A4	0.28	Sand or Gravel
554	79DM547	56 09 19	131 18 28	A4	0.31	Sand or Gravel
555	79DM548	56 10 52	131 16 59	A4	0.36	Sand or Gravel
556	79DM549	56 11 23	131 16 24	A4	0.30	Sand or Gravel
557	79DM550	56 09 24	131 16 51	A4	0.25	Sand or Gravel
558	79DM551	56 09 04	131 16 35	A4	0.28	Rock
559	79DM552	56 08 42	131 14 48	A4	0.19	Vegetation
560	79DM554	56 08 13	131 18 05	A4	0.15	Vegetation
561	79DM555	56 08 28	131 16 33	A4	0.08	Vegetation
562	79DM556	56 08 17	131 16 59	A4	0.07	Vegetation
563	79DM557	56 07 52	131 16 32	A4	0.10	Vegetation
564	79DM558	56 07 02	131 16 26	A4	0.09	Vegetation
565	79RK845	56 05 20	131 18 04	A4	0.25	Sand or Gravel
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585	79RK866	56 02 21	131 19 21	A4	0.08	Vegetation
586	79RK867	56 01 11	131 20 24	A5	0.18	Sand or Gravel
587	79RK868	56 00 18	131 18 52	A4	0.24	Sand or Gravel
588	79RK869	56 02 18	131 13 50	A4	0.08	Vegetation
589	79RK870	56 01 57	131 12 48	A4	0.15	Sand or Gravel
590	79RK871	56 03 15	131 12 25	A4	0.07	Vegetation
591	79-7-14	56 05 37	131 05 45	A4	0.15	Vegetation
592	79RK108	56 17 11	130 47 40	B3	0.32	Sand or Gravel
593	79GJ080	56 16 15	130 49 26	B3	0.18	Vegetation
594	79ER076	56 14 35	130 51 06	A3	0.25	Sand or Gravel
595	79RK109	56 13 58	130 53 16	A3	0.23	Sand or Gravel
596	79GJ081	56 13 02	130 54 10	A3	0.24	Sand or Gravel
597	79RK110	56 12 21	130 53 21	A3	0.20	Sand or Gravel
598	79ER077	56 12 14	130 56 27	A3	0.16	Vegetation
599	79GJ082	56 11 19	130 56 16	A3	0.12	Vegetation
600	79RK111	56 11 08	130 54 30	A3	0.26	Sand or Gravel
601	79GJ083	56 11 42	130 58 01	A3	0.10	Vegetation
602	79ER078	56 11 12	130 52 12	A3	0.13	Vegetation
603	79GJ084	56 08 50	130 58 35	A3	0.20	Vegetation
604	79ER079	56 08 34	130 53 39	A3	0.10	Vegetation
605	79RK112	56 07 09	130 56 03	A4	0.11	Vegetation
606	79MH097	56 13 26	130 41 20	A3	0.05	Vegetation
607	79DM055	56 13 58	130 40 20	A3	0.10	Vegetation
608	79DM056	56 11 53	130 42 47	A3	0.26	Sand or Gravel
609	79MH098	56 10 43	130 44 12	A3	0.15	Vegetation
610	79JD898	56 09 38	130 47 14	A3	0.10	Vegetation
611	79DM057	56 11 03	130 46 04	A3	0.10	Vegetation
612	79MH099	56 10 29	130 49 57	A3	0.18	Vegetation
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614	79MH100	56 06 05	130 46 45	A3	0.14	Vegetation
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617	79JD901	56 05 52	130 53 28	A3	0.08	Vegetation
618	79DM059	56 02 37	130 55 36	A3	0.05	Vegetation
619	79MH101	56 01 52	130 56 39	A3	0.14	Vegetation
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622	79JD904	56 05 00	130 58 44	A3	0.22	Vegetation
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624	79-7-15	56 05 37	131 05 45	A4	0.18	Vegetation
625	79MH102	56 00 19	130 46 04	A3	0.18	Rock
626	79GJ085	56 04 35	130 46 51	A3	0.35	Rock
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628	79ER080	56 08 28	130 54 11	A3	0.10	Vegetation
629	79RK114	56 07 04	130 57 18	A3	0.09	Vegetation
630	79JD906	56 08 37	131 00 48	A4	0.19	Vegetation
631	79RK115	56 06 46	131 00 01	A4	0.11	Vegetation
632	79ER081	56 07 53	131 00 35	A4	0.19	Sand or Gravel
633	79JD907	56 05 43	131 02 15	A4	0.21	Sand or Gravel
634	79RK116	56 03 40	131 05 10	A4	0.18	Sand or Gravel
635	79ER082	56 02 48	131 02 40	A4	0.05	Vegetation
636	79JD908	56 02 58	131 00 44	A4	0.08	Vegetation
637	79ER083	56 17 11	131 11 04	B4	0.12	Rock
638	79RK117	56 17 25	131 09 20	B4	0.15	Rock
639	79ER084	56 16 46	131 09 11	B4	0.30	Rock
640	79ER085	56 15 52	130 57 50	B3	0.22	Rock
641	79RK121	56 16 20	130 50 20	B3	0.16	Rock
642	79ER001	56 09 20	131 01 59	A4	0.12	Rock
643	79DM061	56 01 59	130 45 10	A3	0.15	Rock
644	79DM068	56 02 56	130 45 50	A3	0.17	Rock
645	79DM065	56 02 30	130 45 24	A3	0.24	Rock
646	79GJ091	56 03 26	130 45 38	A3	0.18	Rock

TOTAL GAMMA-RAY INTENSITIES AT GROUND STATIONS IN THE BRADFIELD CANAL QUADRANGLE, SOUTHEASTERN ALASKA

by

R. D. KOCH, R. L. ELLIOTT, AND RICHARD ROSSITER

1981

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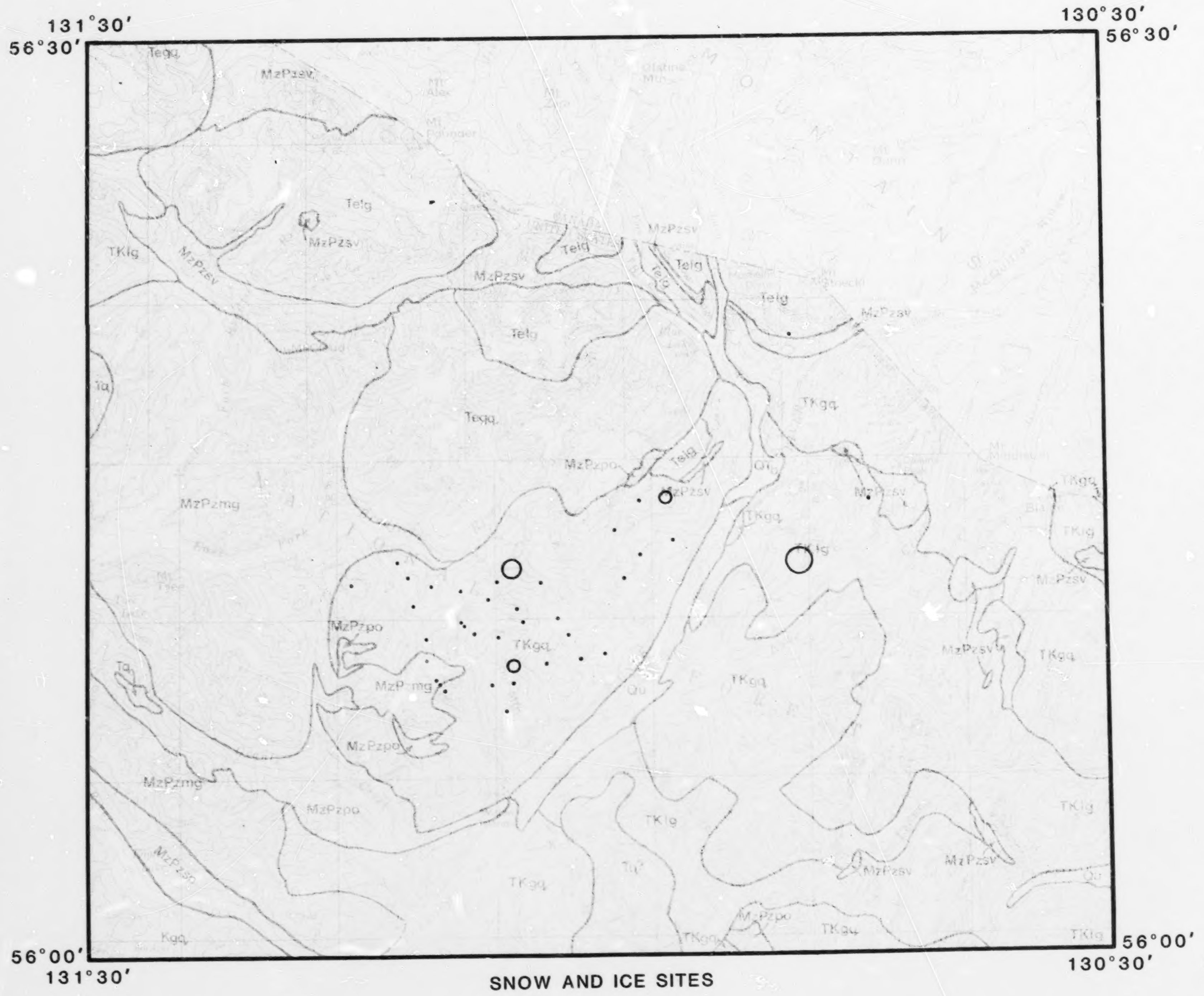
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY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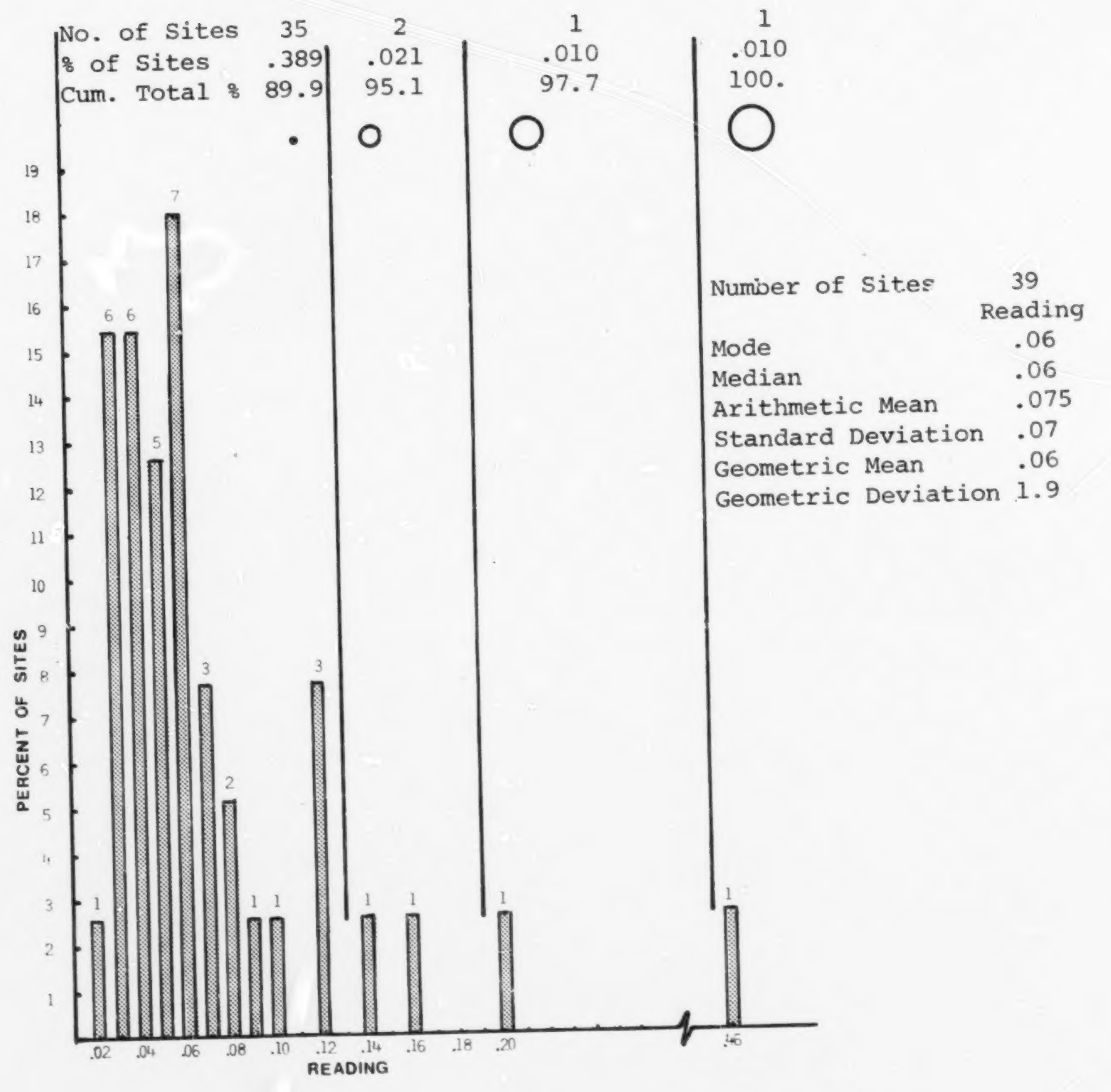
SNOW AND ICE SITES



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Standard Deviation	.07
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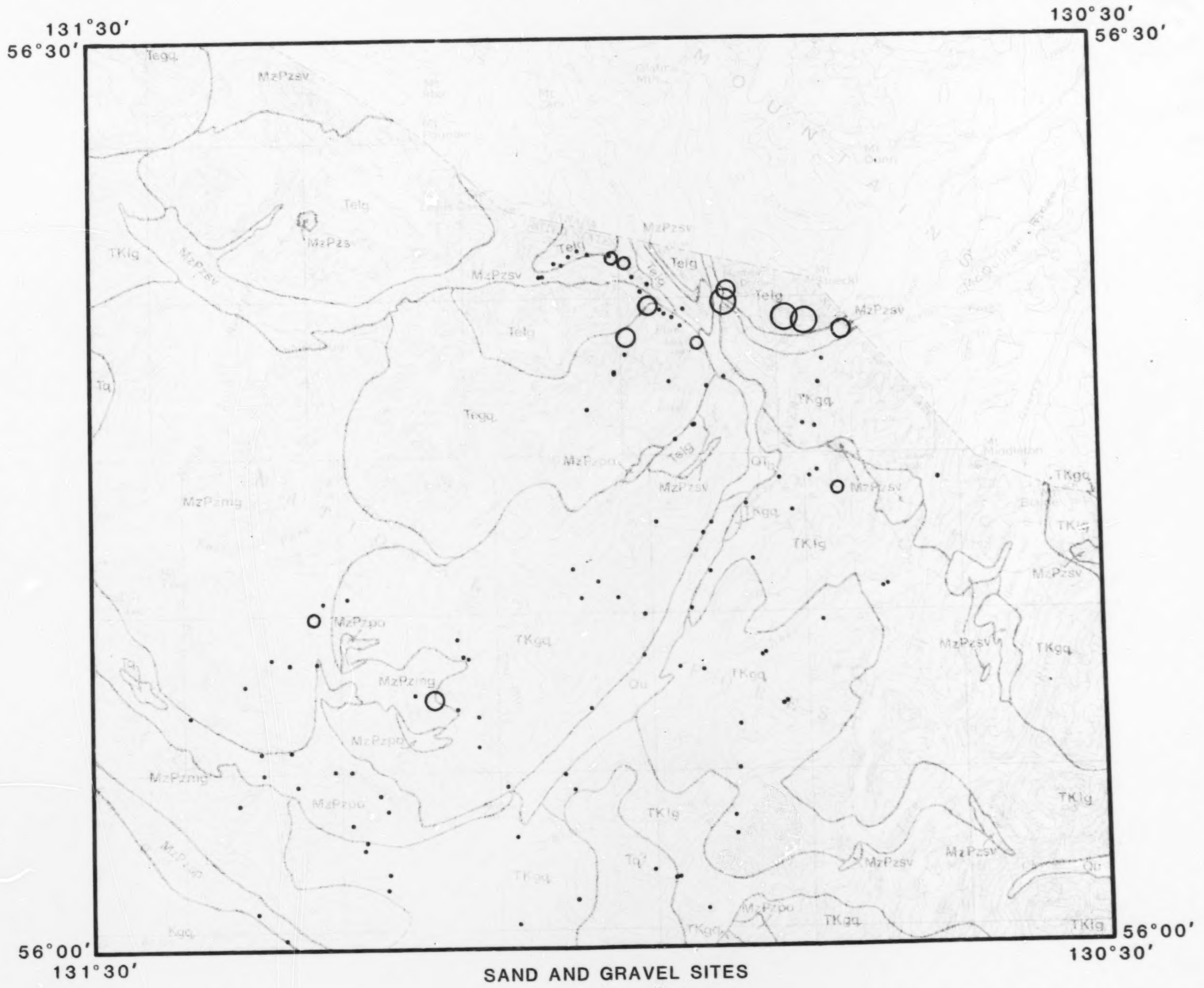
Geometric Deviation	1.9

SNOW AND ICE SITES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TKqd
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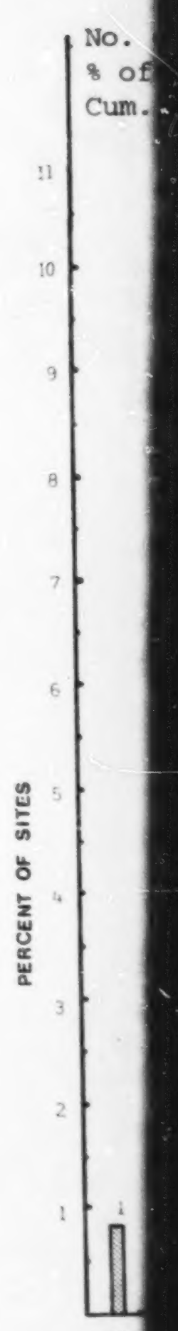
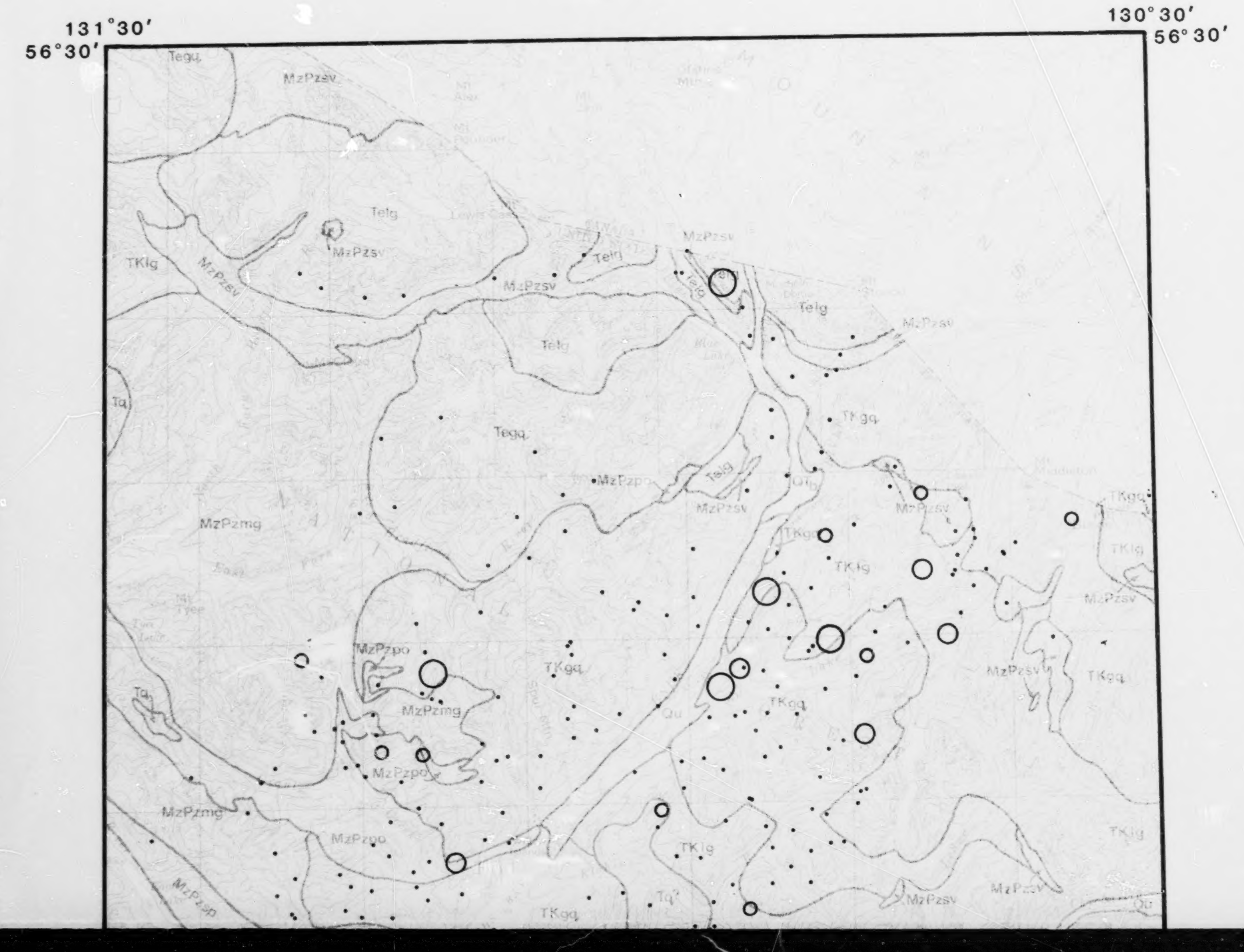
SAND AND GRAVEL SITES

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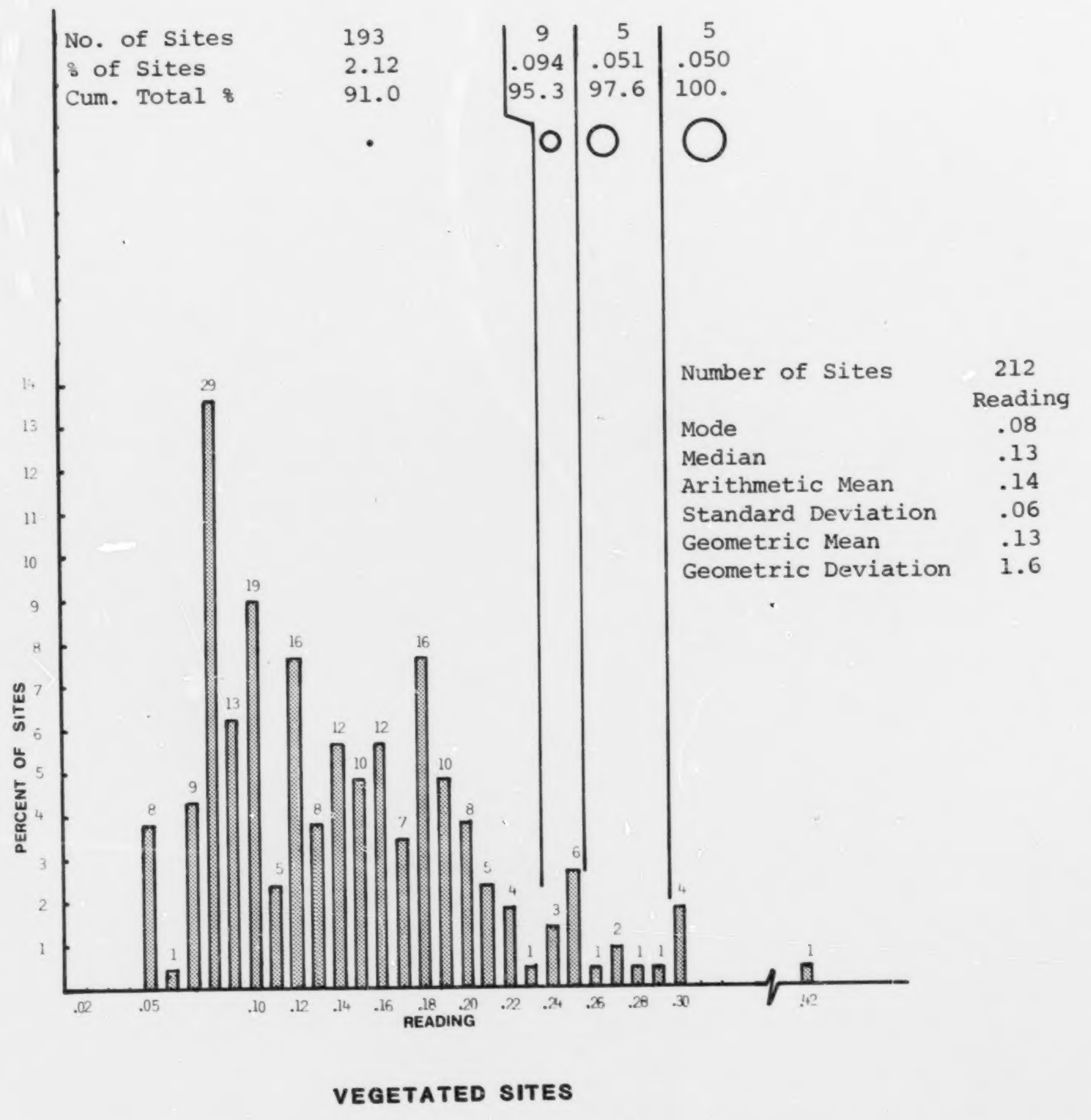

Number of Sites	212
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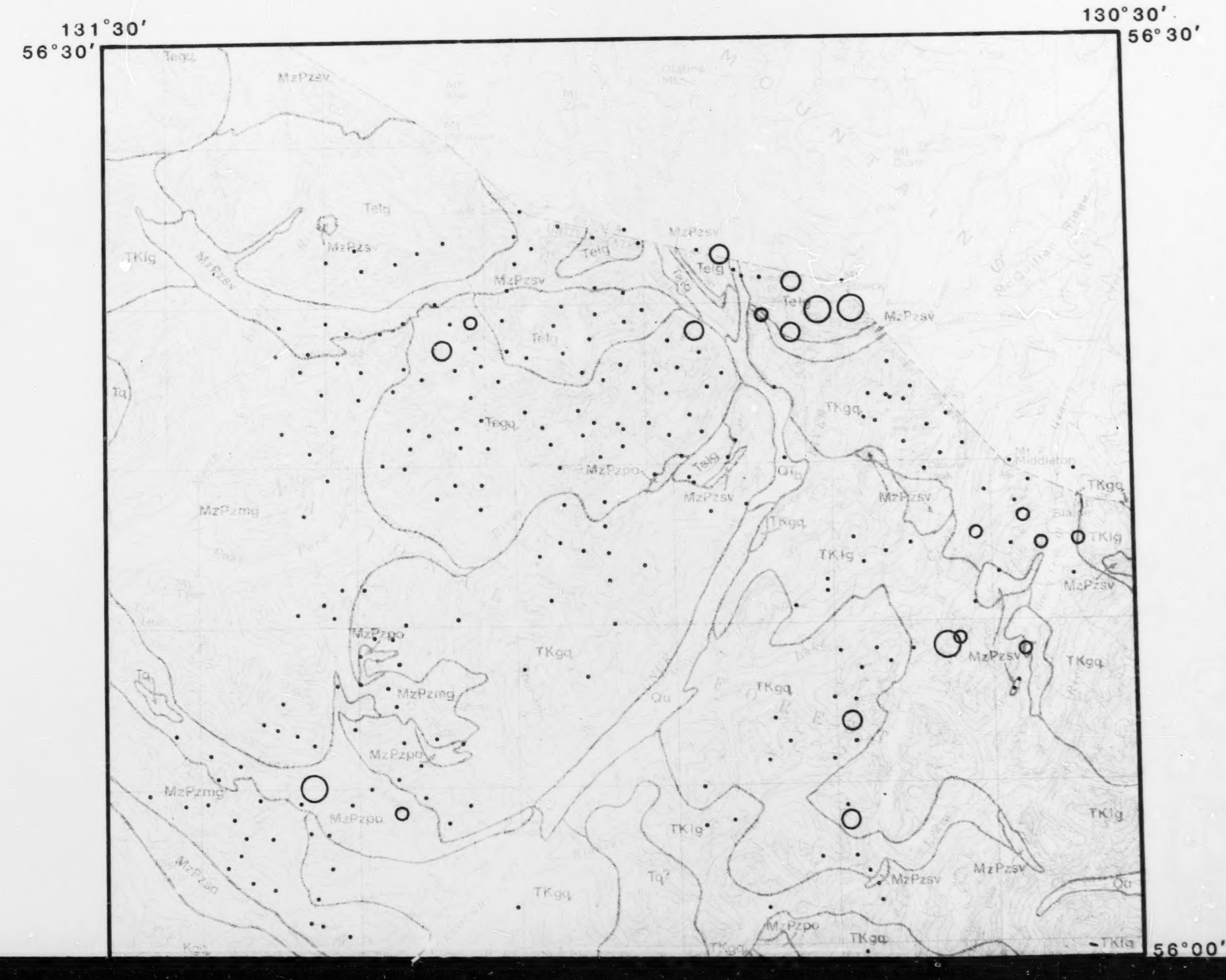
Median	.13
Arithmetic Mean	.14
Standard Deviation	.06
Geometric Mean	.13
Geometric Deviation	1.6

VEGETATED SITES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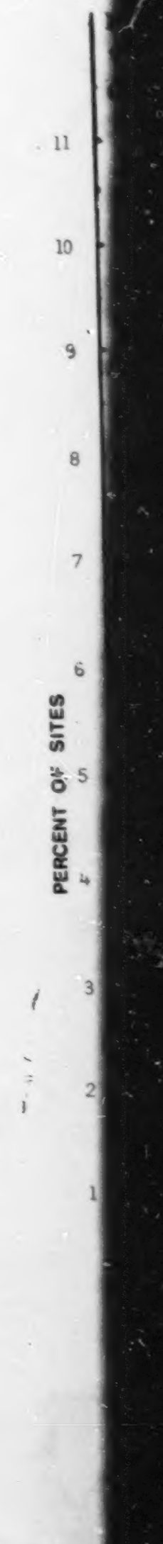

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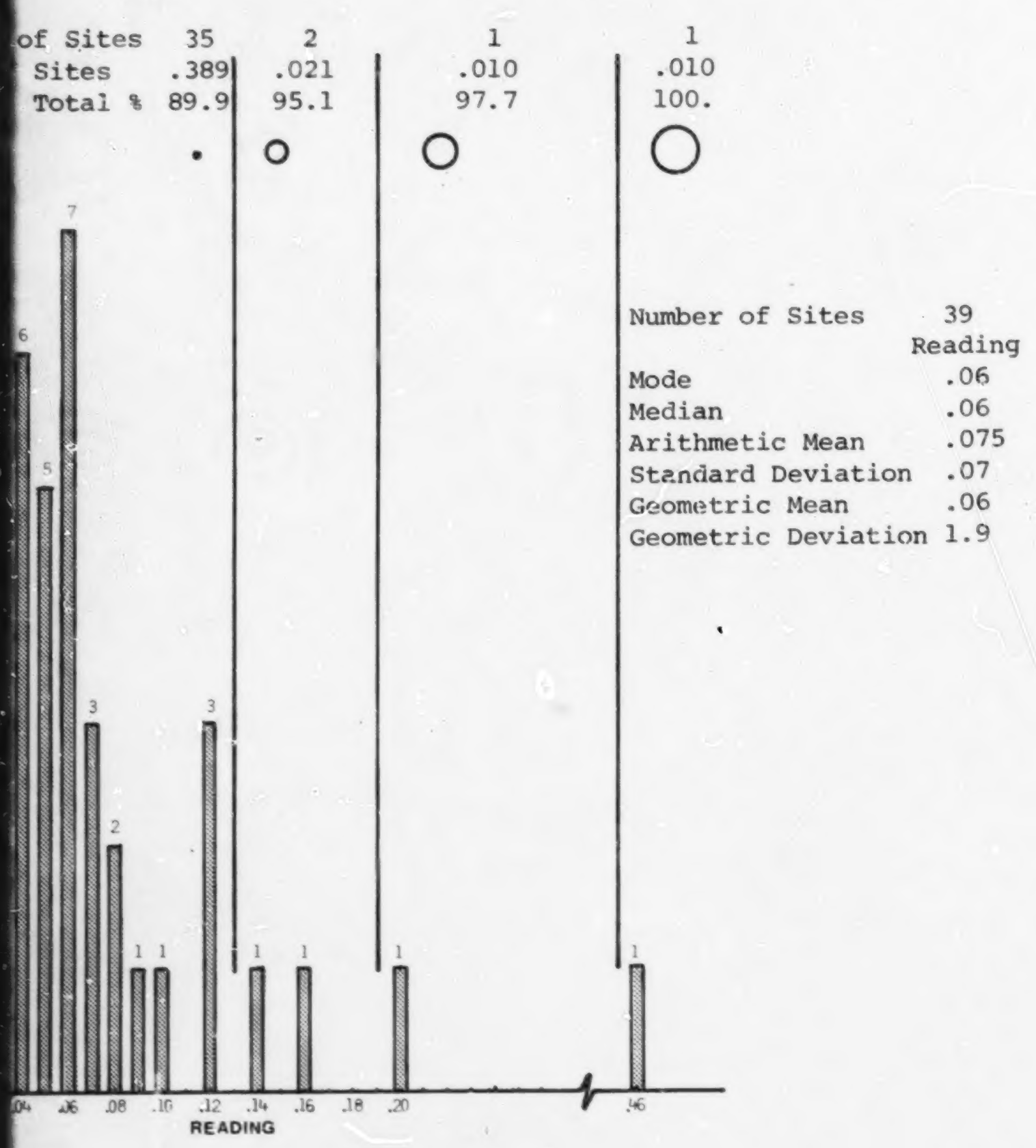
81-840
SHEET 2 OF 2



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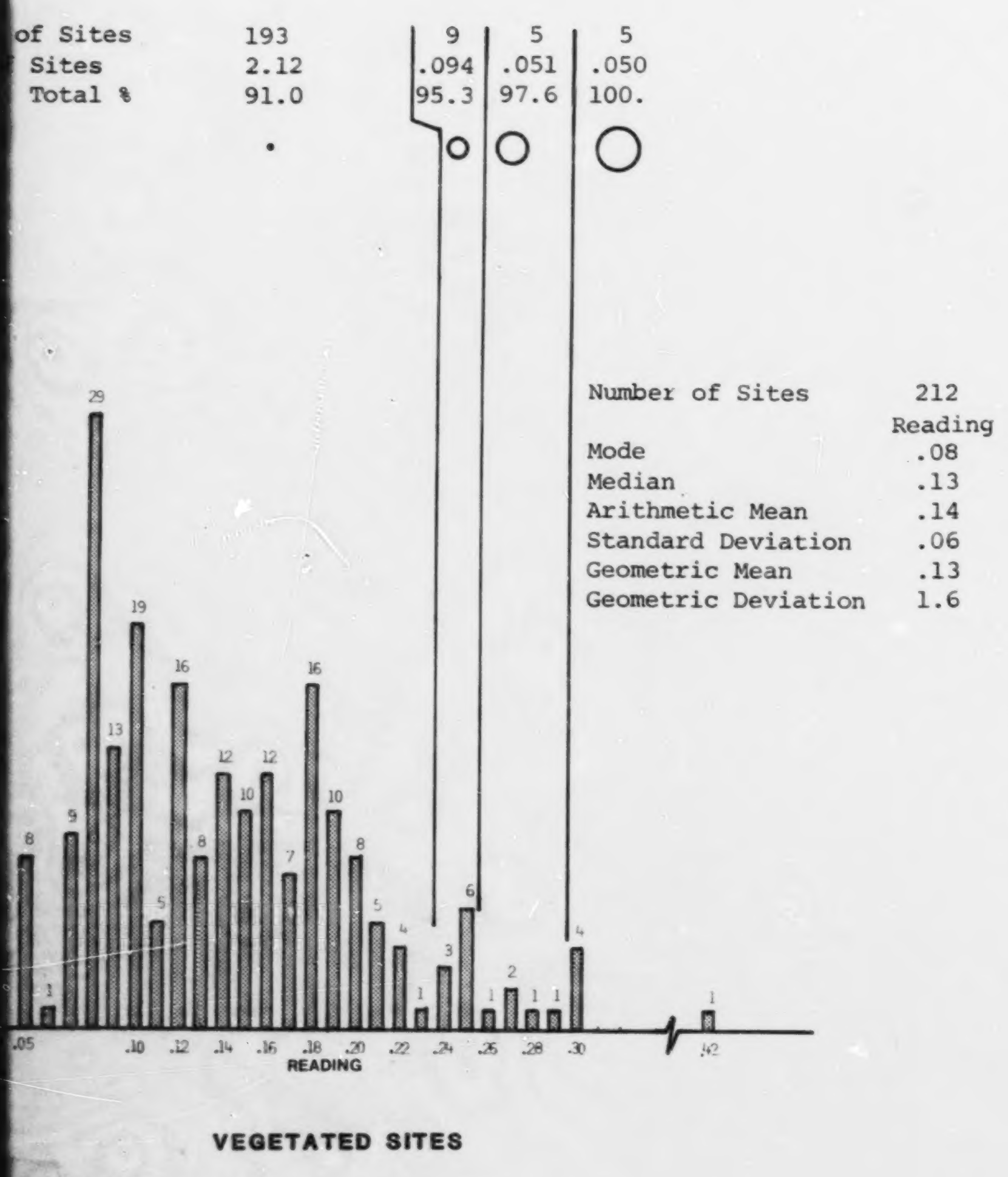

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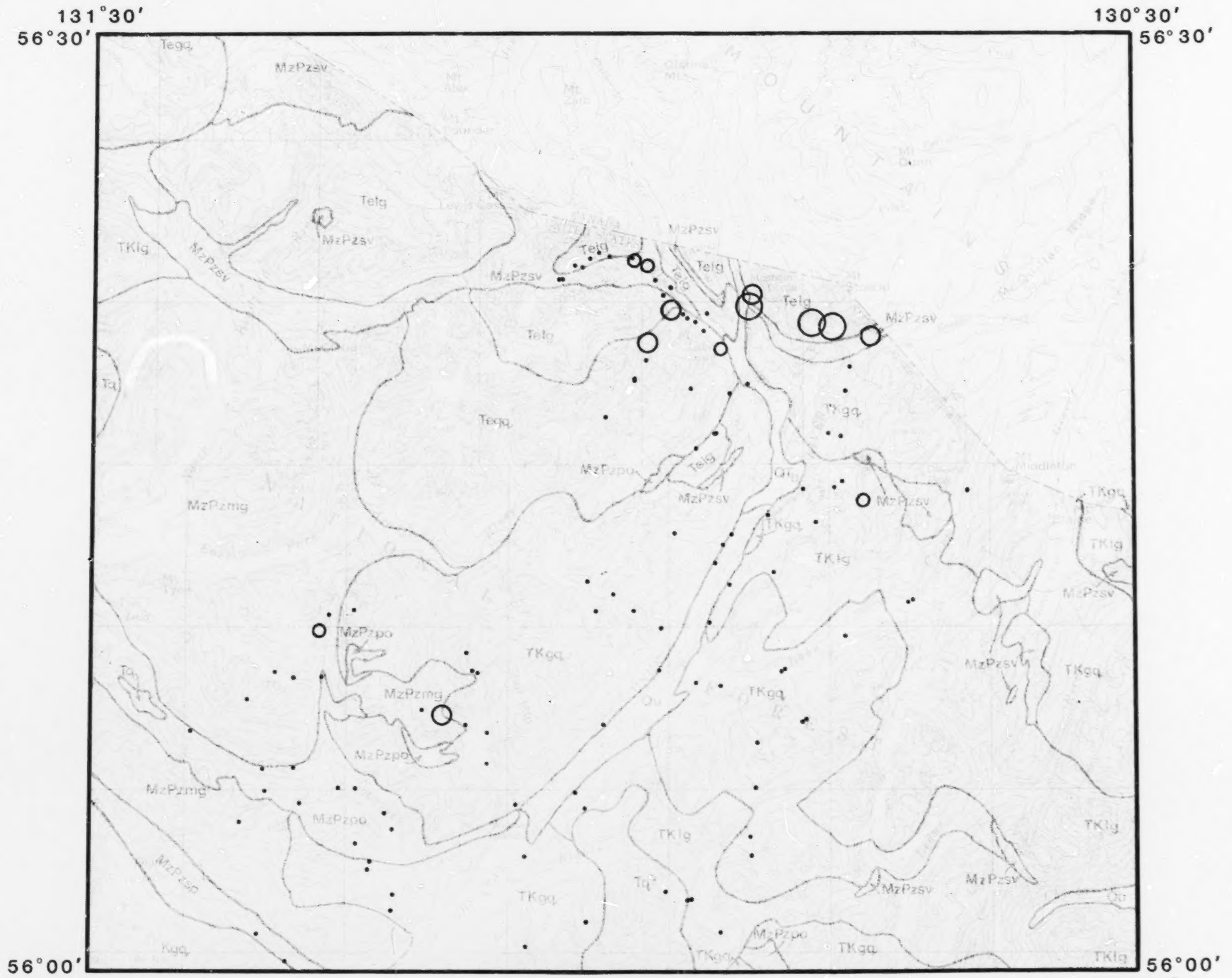
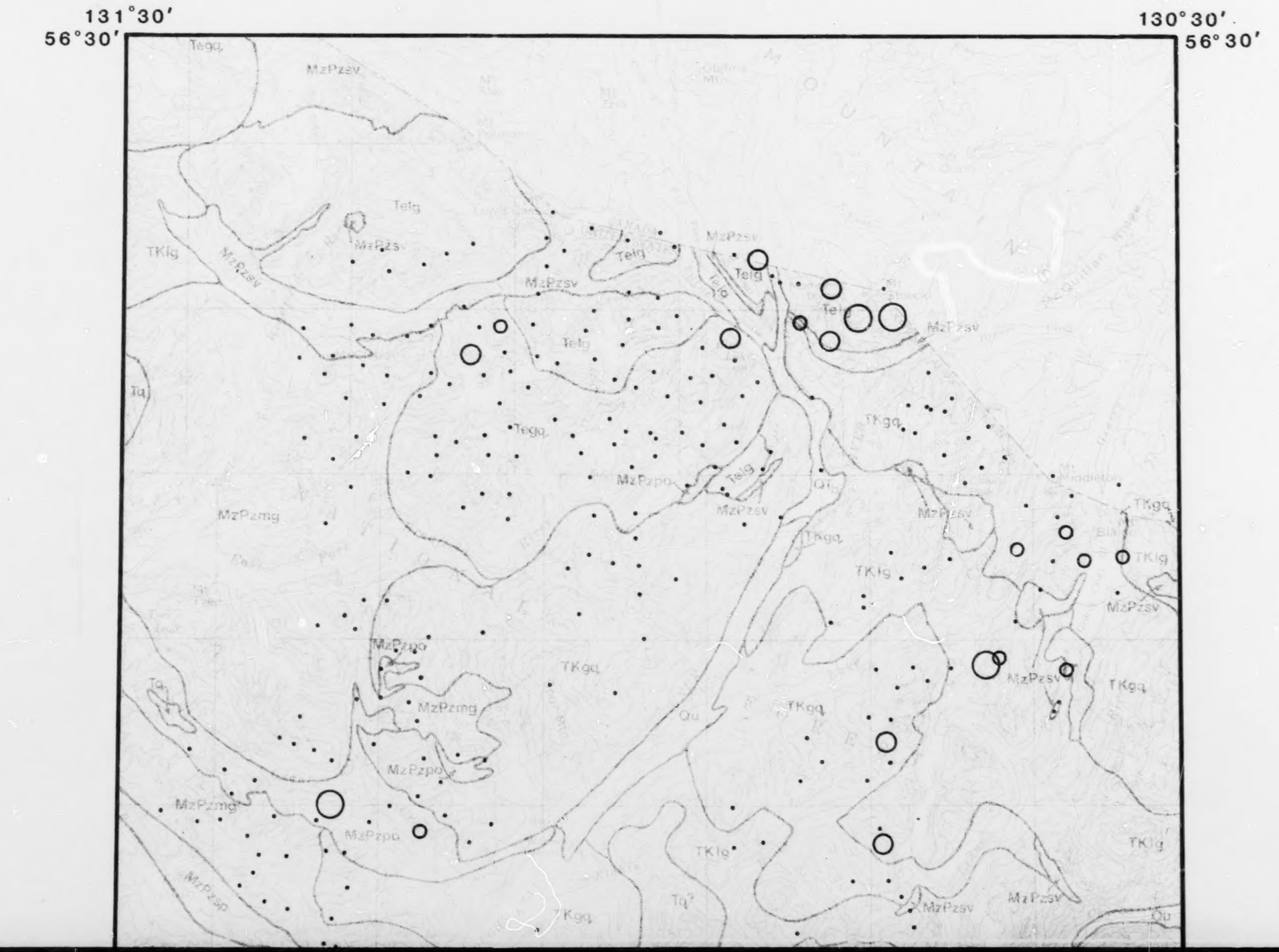
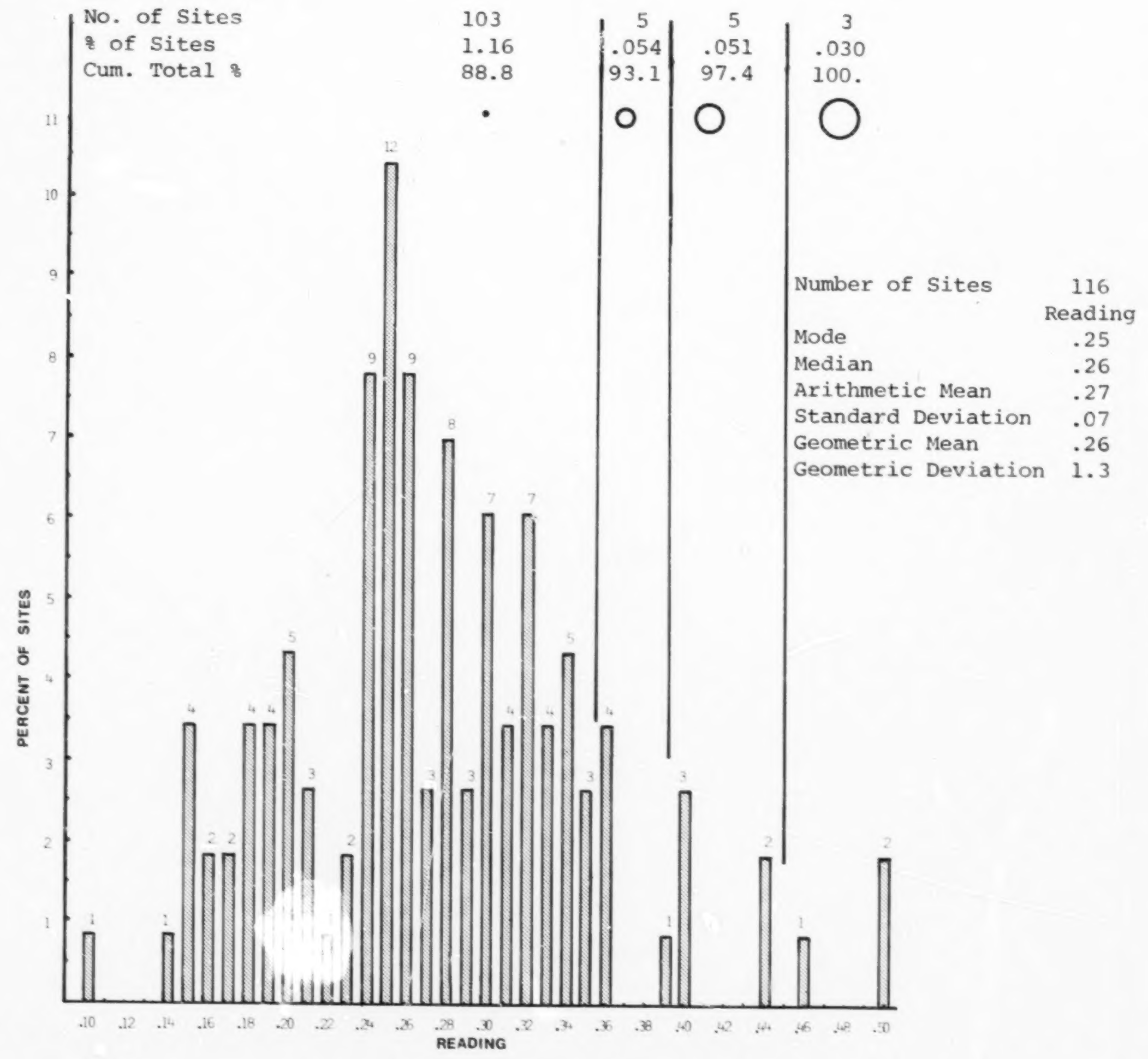
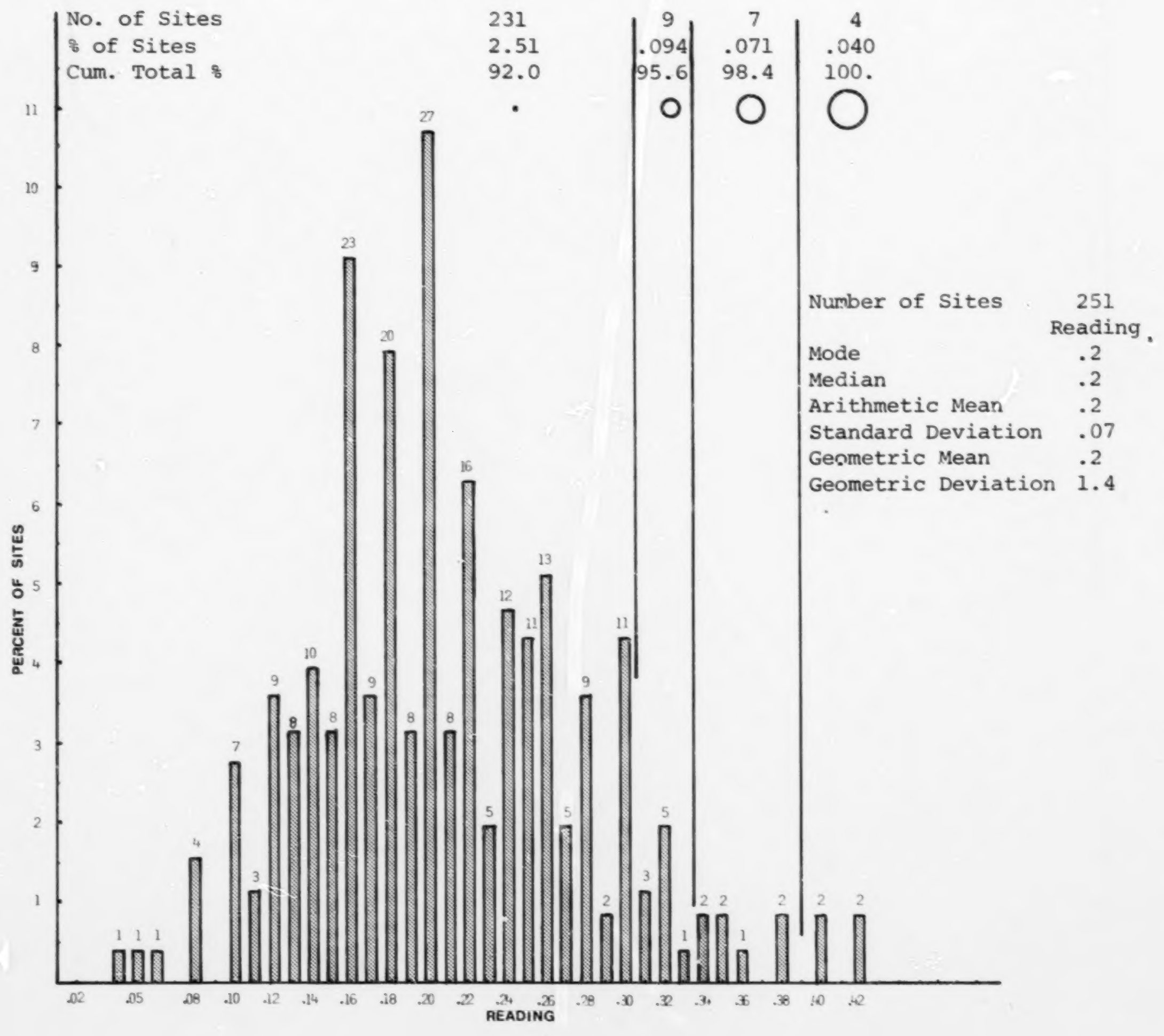


SAND AND GRAVEL SITES





SAND AND GRAVEL SITES



ROCK SITES

Discussion

Four maps on this sheet show the distribution of sites where gamma-ray measurements were made for each of the four site types: sand and gravel, rock, vegetation, and snow or ice. A fifth map shows sites for all measurements made. Sites with the highest values on each map are represented by three sizes of circles, with larger circles indicating higher values. Other site locations are shown by dots. The range of values associated with each symbol is indicated on the corresponding histogram.

Data from both rock and sand-and-gravel sites form relatively uniform distributions with only very slight asymmetry. Data from vegetated sites are slightly less uniform and less symmetrical. None of the populations is bimodal, nor do any have a strongly extended high-end tail, with the exception of the highest snow-and-ice site value.

Gravel Sites

Gamma-ray readings were made at 116 sand- or gravel-covered sites scattered sparsely across the study area. The highest 11 percent of values are indicated by circles on the map. With three isolated exceptions, all of the highest values for this site type cluster near Blue River and unit Telg near boundary peak Mt. Stoeckl. Most of the Telg rock in this area consists of coarsely potassium feldspar-porphyritic leucocratic quartz monzonite.

Rock Sites

The range of gamma-ray intensities at rock sites is slightly broader, and the population of values somewhat lower, than for the values measured at sand and gravel sites. The apparent shift could result from a combination of factors. The geometry of some landing sites may produce mass effects, with rock sites tending to be flat to convex and gravel sites commonly being flat to slightly concave, often with boulders nearby. Probably the most significant factor is that sand and gravel sites usually have completely exposed rock material, while many sites classified as dominantly rock exposure actually have some partial covering of wet moss, other plant material, or snow.

The highest 8 percent of the rock site values are marked with circles on the map. The only strong clustering appears to be associated with unit Telg near Mt. Stoeckl. Other high values are scattered or show weak groupings.

Vegetated Sites

The range of gamma-ray values recorded at vegetated sites is essentially identical to the range for rock sites; however, the bulk of the values from vegetated sites is shifted toward the lower end of the distribution. This probably results from the effects of gamma-ray absorption produced by the surface covering. This absorption varies from site to site and from time to time in response to different thicknesses (and possibly types) of plant cover, and different amounts of water (which absorbs radiation) and radiation-emitting soil components contained in the plant-rich layers. The bulk of vegetated sites are in the south-central part of the study area, generally at lower elevations, while rock sites are concentrated more to the north. Despite the geographic shift in site density, the difference in population levels is probably due to gamma-ray absorption.

The upper 9 percent of values for vegetated sites are shown by circles on the map. They do not form a recognizable pattern, but seem to be scattered across the area.

Snow and Ice Sites

Only 41 readings were made on snow or ice. With one exception, the values are conspicuously lower than those for any other site type, reflecting significant gamma-ray absorption by water. Since snow or ice depth was not measured but varied greatly at different sites, the amount of absorption of bedrock generated gamma rays probably varied greatly as well. Absorption was essentially complete at many sites where snow depth may have been tens of meters. The low-end snow and ice site values, ranging from 0.02 to perhaps about 0.08, probably indicate the level of gamma ray contribution from atmospheric and cosmic sources.

The upper 10 percent of snow and ice sites are marked on the maps with circles but these four sites are scattered and are too few to allow conclusions. The only reading with a level comparable to those in the high end of other site type distributions occurs in unit TKlg east of the Unuk River. It is not supported by values at nearby rock or vegetated sites.

All Sites Combined

The last map on this sheet shows the distribution of the upper six percent of values for all gamma-ray readings combined. The data were not adjusted to compensate for the different levels of the bulk of readings in each site-type group. As a result, the circles on this map correspond mainly to sand and gravel sites (25) and rock sites (12).

Two thirds of the highest values from the combined data set form a significant cluster in the area south and west of Mt. Stoeckl. The other high values are scattered across the central part of the study area.

An attempt was made to adjust the values of each site type group so that all groups had the same arithmetic or geometric means. This resulted in the high values for the combined data being scattered sparsely in a vague east-west belt across the middle of the study area, and a concentration south and west of Mt. Stoeckl which was less dense than that on the map shown here. This kind of adjustment or "normalizing" of the data is not rigorously valid since the amount of absorption, the effect which the adjustment is intended to counteract, varies greatly from site to site, as well as between site types. As a result, the amount of compensation is usually either too high, resulting in spurious "anomalies", or too low, excessively depressing some values. Adjusting the snow and ice site data in this manner elevates readings which may represent mainly atmospheric and cosmic radiation, to levels comparable with readings representing bedrock radiation from other sites. This "normalized" data is misleading and is not presented here.

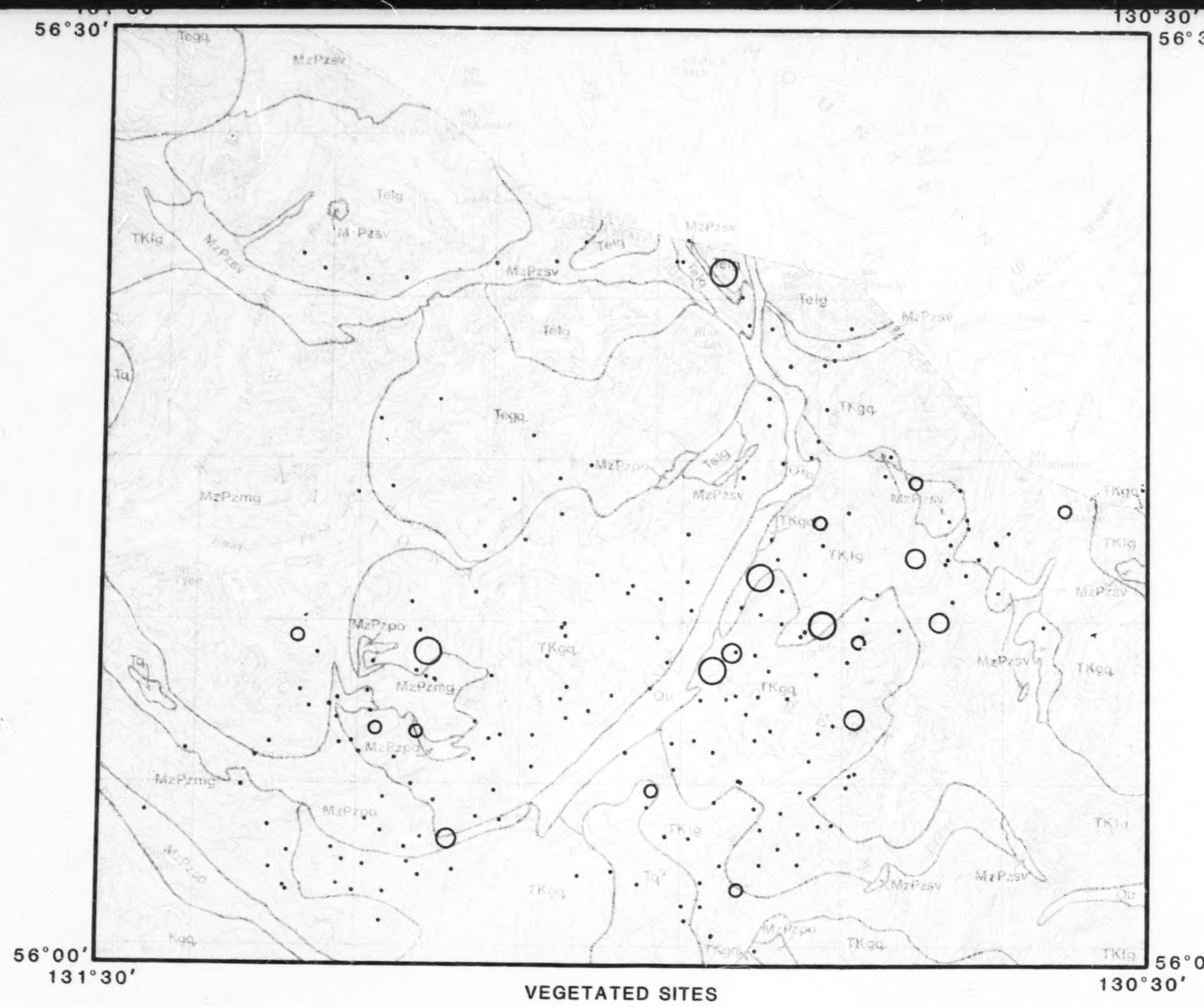
Uranium Analyses of Selected Rock Samples

Preliminary determinations of uranium content have been made on granitic rock samples from 32 of the sites in the eastern two-thirds of the area of this gamma-ray survey. Three samples from each major granitic body and nine samples of Telg near Mt. Stoeckl were analyzed. Though small in number, these samples are probably representative of the granitic bodies from which they were collected. Scintillometer readings were not considered when selecting the samples for U analysis and values tend to have the same level within each body; except for Telg near Mt. Stoeckl which has a broad range of values. The values average 2.7 ppm U and only four samples have 5 ppm U or more. All four of these samples (5, 5, 20, and 26 ppm U) are from unit Telg near Mt. Stoeckl.

Conclusion

The most significant concentration of high gamma-ray readings is clustered in the area near Blue River and in unit Telg near Mt. Stoeckl along the Canadian border. This latter area also produced the four highest values of uranium in rock samples. Most high gamma-ray values elsewhere occur singly or in small groups scattered throughout the study area.

This simple type of gamma-ray survey can be a useful adjunct to helicopter-supported fieldwork. It can be accomplished with minimal effort from the field crew and for essentially no additional cost. Recording the readings took only seconds after each landing and no extra flying or landing was done beyond that required for the main project objectives. Readings are significantly affected by the type of ground surface at each site and this factor must be taken into account. The data from rock sites and gravel sites provide the most reliable and useful information. The results can outline areas which may warrant detailed investigation with 4-channel spectrographic


56°30'
130°30'
56°30'
56°00'
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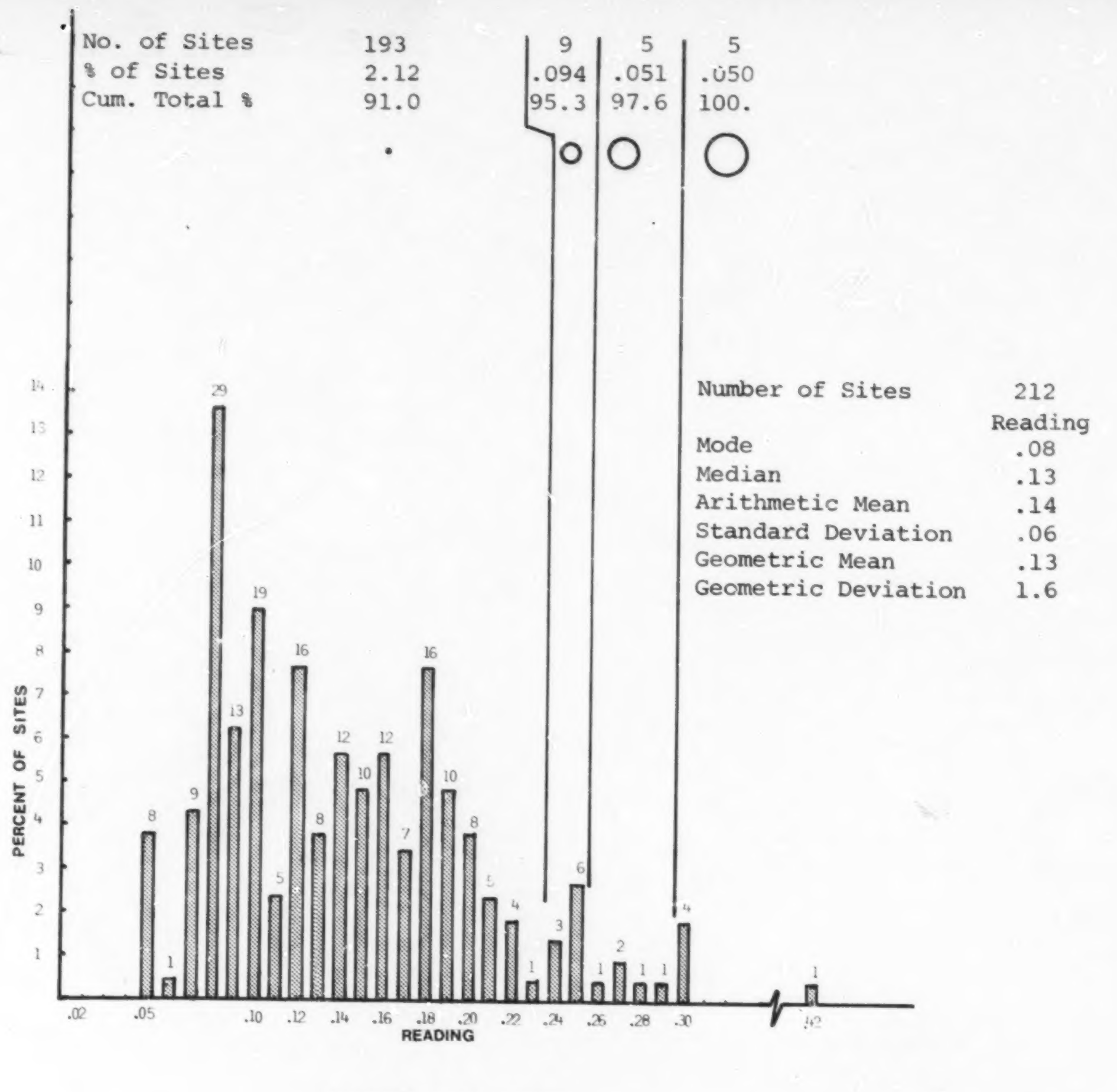
56°00'
130°30'
Telg
Tegq
TKgq
TKlg
MzPzsv
MzPzmg
MzPzpo
Qu
Tq
Kgq

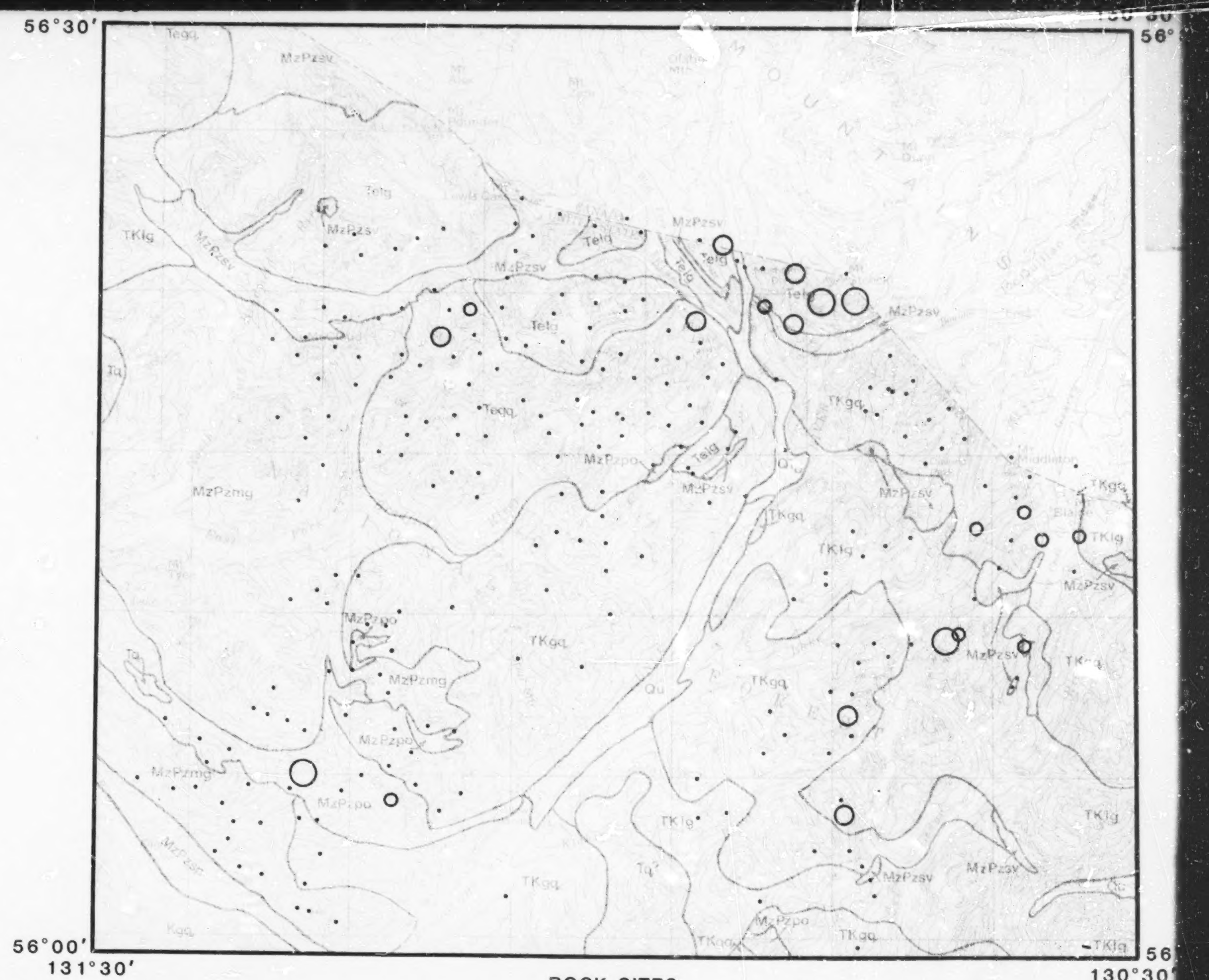
VEGETATED SITES



No. of Sites	193	9	5	5
% of Sites	2.12	.094	.051	.050
Cum. Total %	91.0	95.3	97.6	100.

Number of Sites	212
	Reading
Mode	.08
Median	.13
Arithmetic Mean	.14
Standard Deviation	.06
Geometric Mean	.13
Geometric Deviation	1.6

VEGETATED SITES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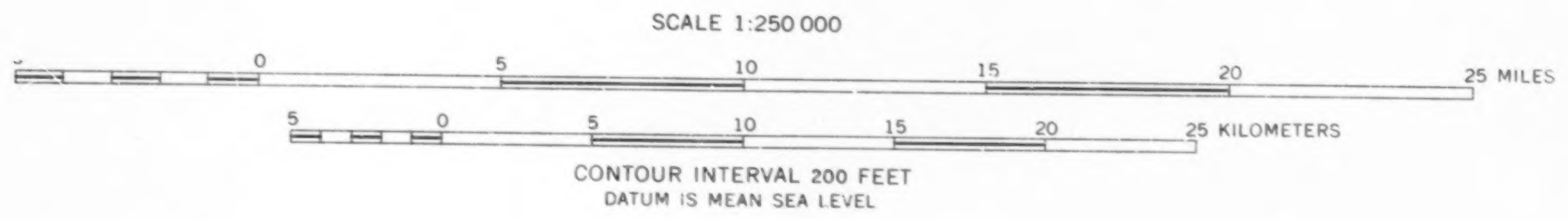
56°00'
131°30'
130°30'
Telg
Tegq
TKgq
TKlg
MzPzsv
MzPzmg
MzPzpo
Qu
Tq
Kgq

ROCK SITES


SCALE 1:250 000
0
5
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15
20
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5
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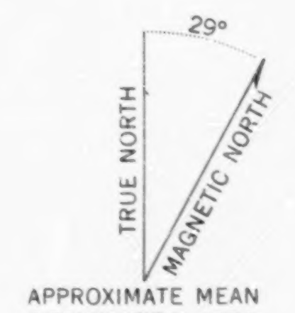
20
25 KILOMETERS

CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL


29°
TRUE NORTH
MAGNETIC NORTH

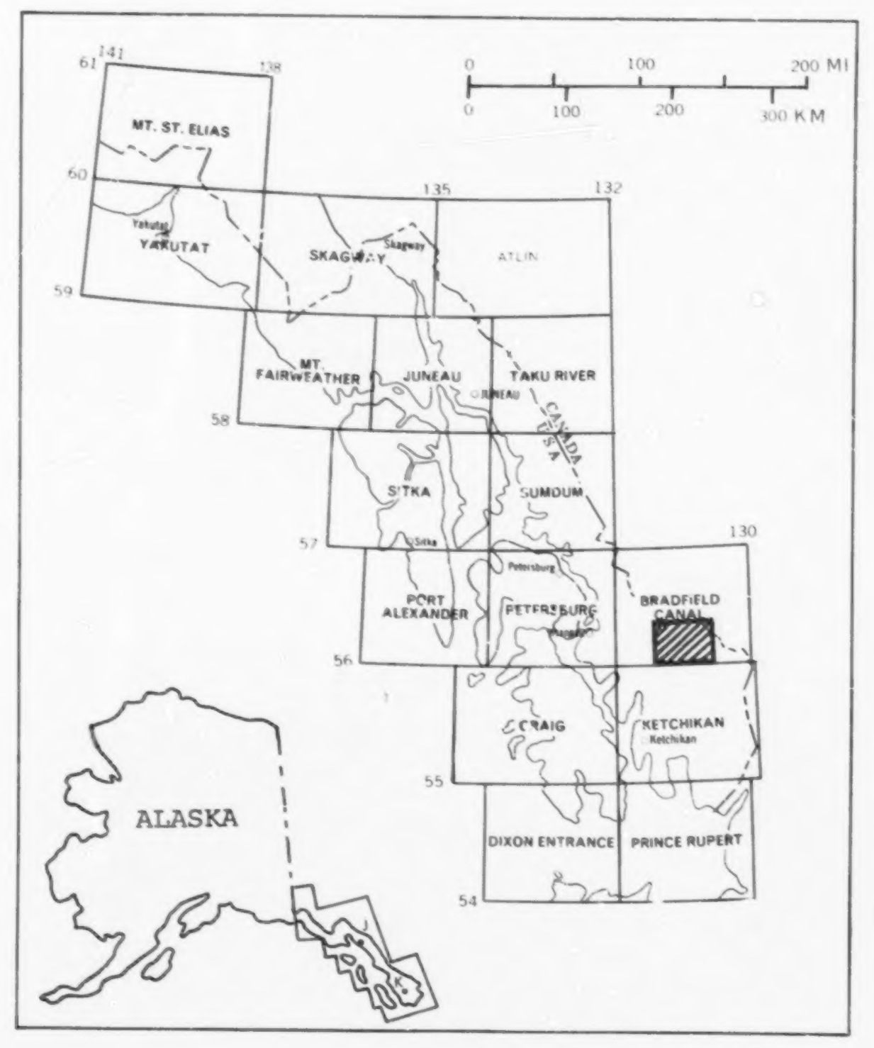
APPROXIMATE MEAN
DECLINATION, 1955

Base from USGS 1:250,000 topo series:
Bradfield Canal, 1955, ALASKA-CANADA.

Geology by: H. C. Berg, D. A. Brew, J. E. Decker, M. F. Diggles, R. L. Elliott, J. D. Gallinatti, S. M. Karl, R. D. Koch, M. L. Miller-Hoare, R. P. Morrell, J. G. Smith, and R. A. Sonnevil, 1972-1979.

Unit Descriptions

Qu	UNCONSOLIDATED DEPOSITS, UNDIVIDED (Quaternary)
QTb	BASALT (Quaternary and Tertiary?)
Telg	LEUCOCRATIC QUARTZ MONZONITE AND GRANODIORITE (Eocene)
Tegq	GRANODIORITE AND QUARTZ DIORITE (Eocene)
Tq	QUARTZ DIORITE (Eocene or Paleocene)
TKlg	LEUCOCRATIC QUARTZ MONZONITE AND GRANODIORITE (Tertiary and/or Cretaceous)
TKgq	GRANODIORITE AND QUARTZ DIORITE (Tertiary and/or Cretaceous)
Kgq	BIOTITE-HORNBLENDE QUARTZ DIORITE, PLAGIOCLASE-PORPHYRITIC BIOTITE GRANODIORITE/QUARTZ DIORITE, BOTH LOCALLY CONTAIN GARNET AND/OR EPIDOTE (Cretaceous)
MzPzmg	MIGMATITE AND ORTHOGNEISS, WITH LESSER PARAGNEISS (Mesozoic and/or Paleozoic)
MzPzpo	PARAGNEISS AND ORTHOGNEISS, WITH LESSER AMPHIBOLITE AND MARBLE (Mesozoic and/or Paleozoic)
MzPzsp	SCHIST AND PARAGNEISS, WITH LESSER AMPHIBOLITE AND MARBLE (Mesozoic and/or Paleozoic)
MzPzsv	METASEDIMENTARY AND LESSER METAVOLCANIC ROCKS, WITH LOCAL MARBLE (Mesozoic and/or Paleozoic)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100
200 MI
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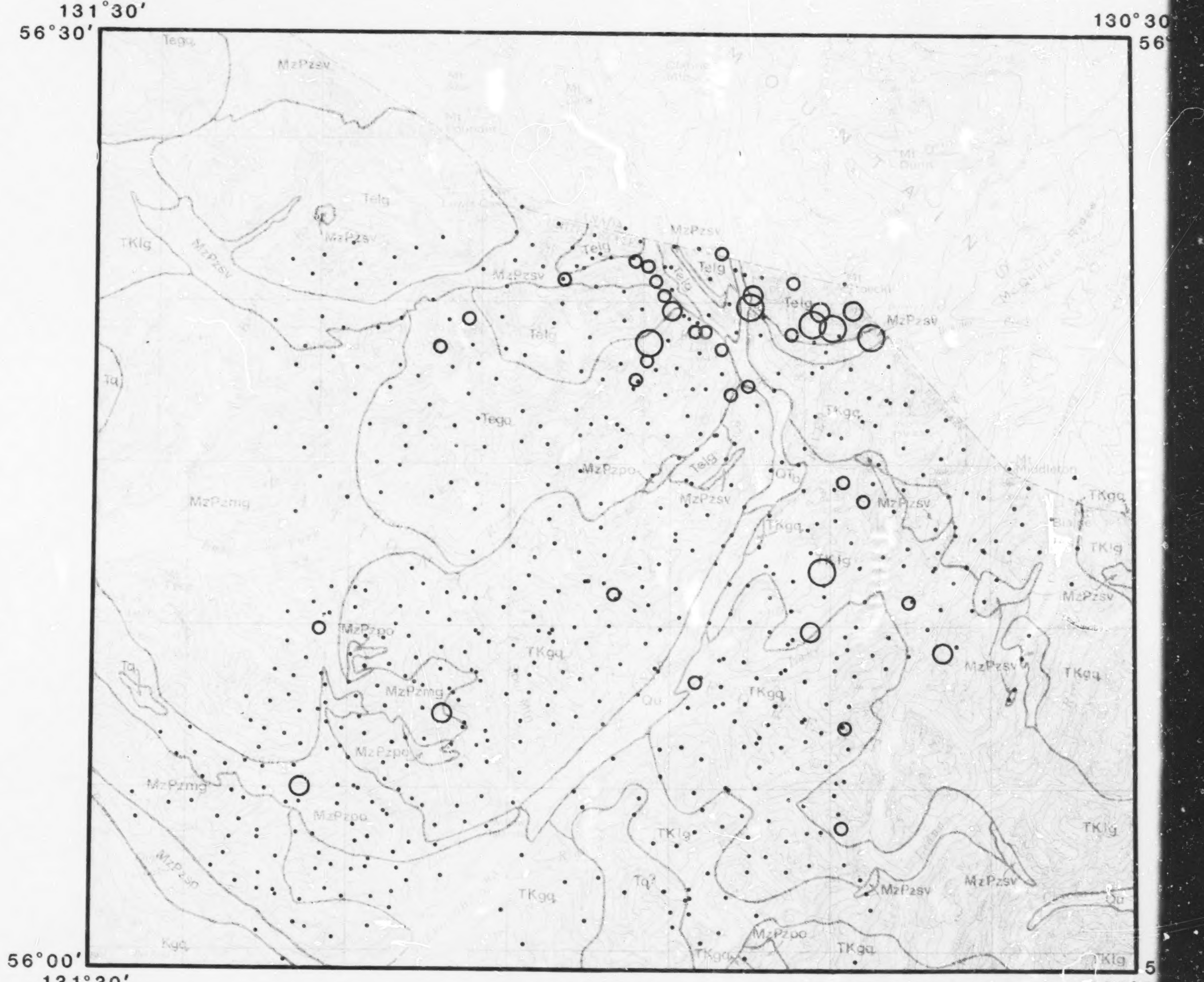
200
300 KM
MT. ST. ELIAS
YAKUTAT
SKAGWAY
ATLIN
MT. FAIRWEATHER
JUNEAU
TAKU RIVER
SITKA
SUMDUM
PORT ALEXANDER
PETERSBURG
BRADFIELD CANAL
CRAIG
KETCHIKAN
DIXON ENTRANCE
PRINCE RUPERT
ALASKA
CANADA
U.S.A.


131°30'
56°30'
56°00'
131°30'
Telg
Tegq
TKgq
TKlg
MzPzsv
MzPzmg
MzPzpo
Qu
Tq
Kgq

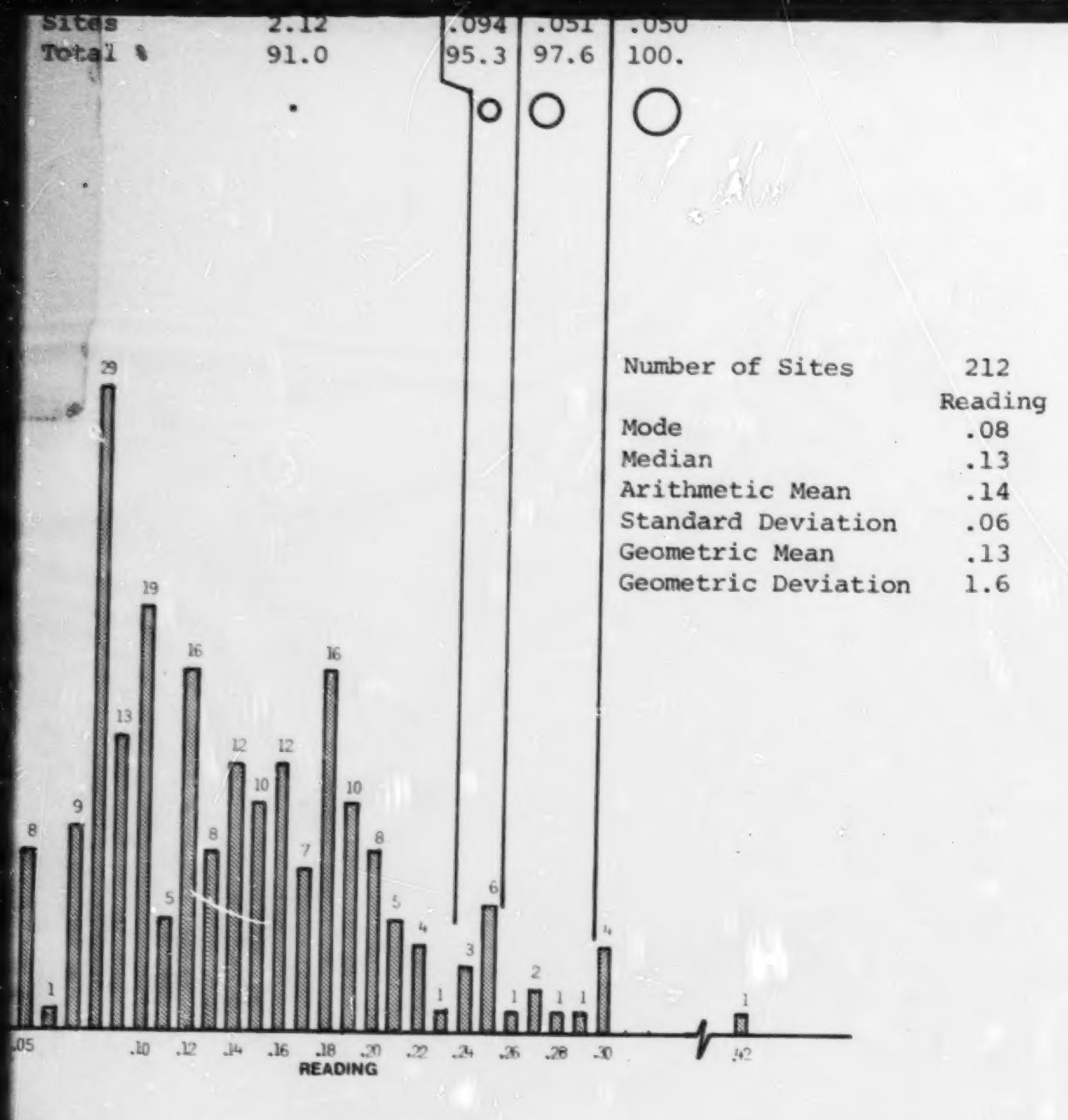
ALL SITES

TOTAL GAMMA-RAY INTENSITIES AT GROUND STATIONS IN THE BRADFIELD CANAL QUADRANGLE, SOUTHE

by

R. D. KOCH, R. L. ELLIOTT, AND RICHARD ROSSITER

1981



Number of Sites	212
	Reading
Mode	.08
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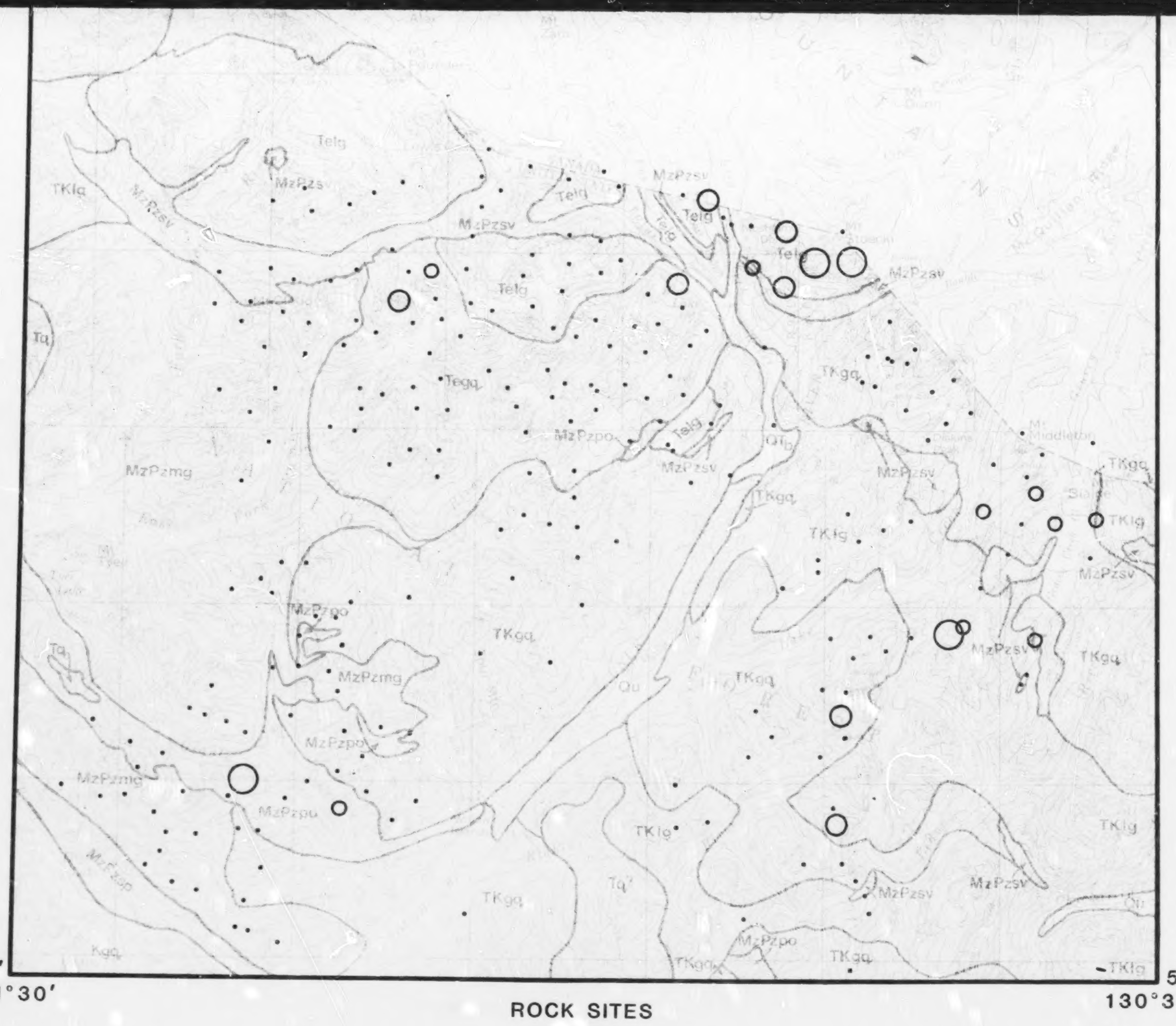
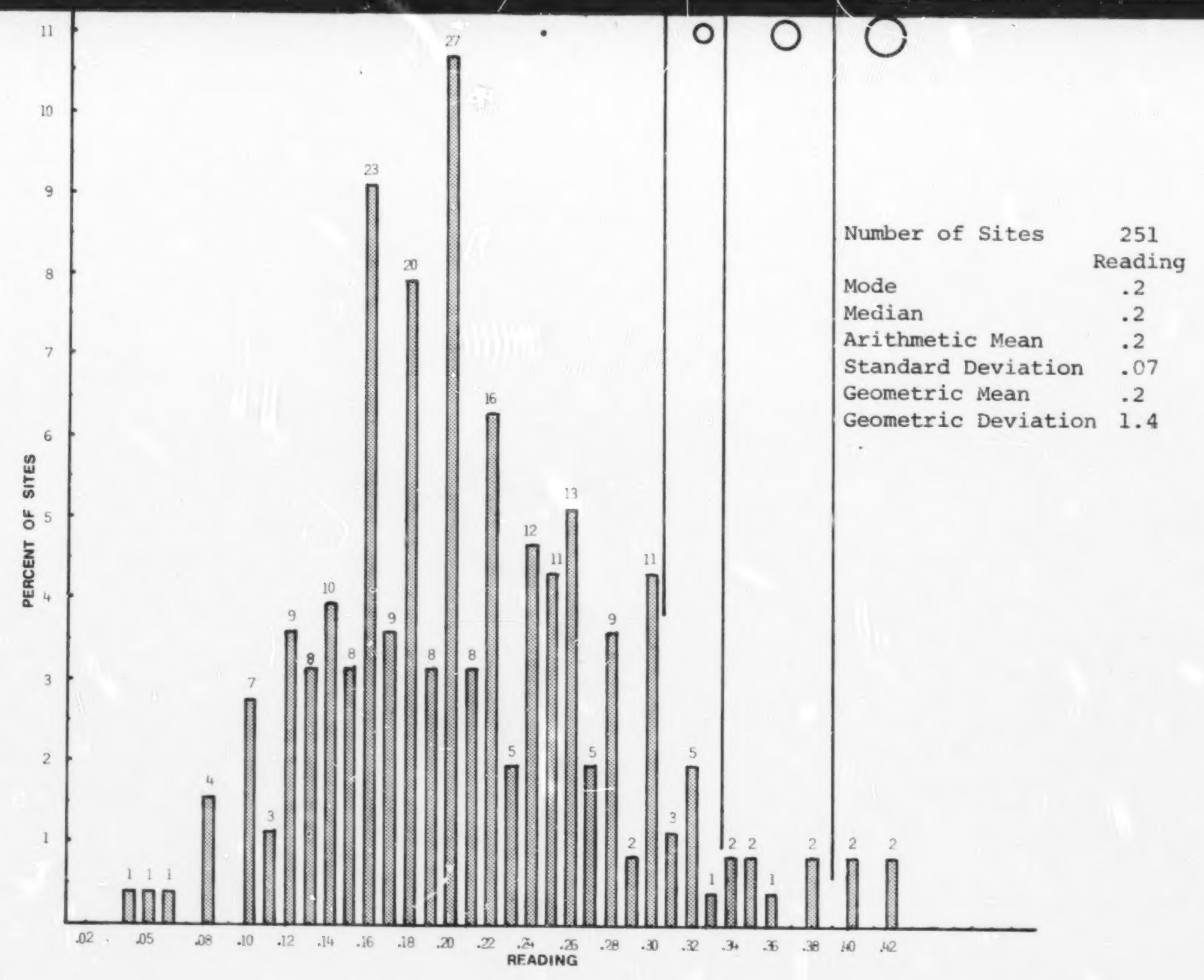


ROCK SITES



Number of Sites	251
	Reading
Mode	.2
Median	.2
Arithmetic Mean	.2
Standard Deviation	.07
Geometric Mean	.2
Geometric Deviation	1.4

ROCK SITES

River. It is not supported by values at nearby rock or vegetated sites.

All Sites Combined

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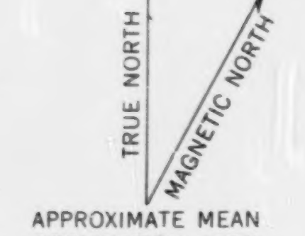
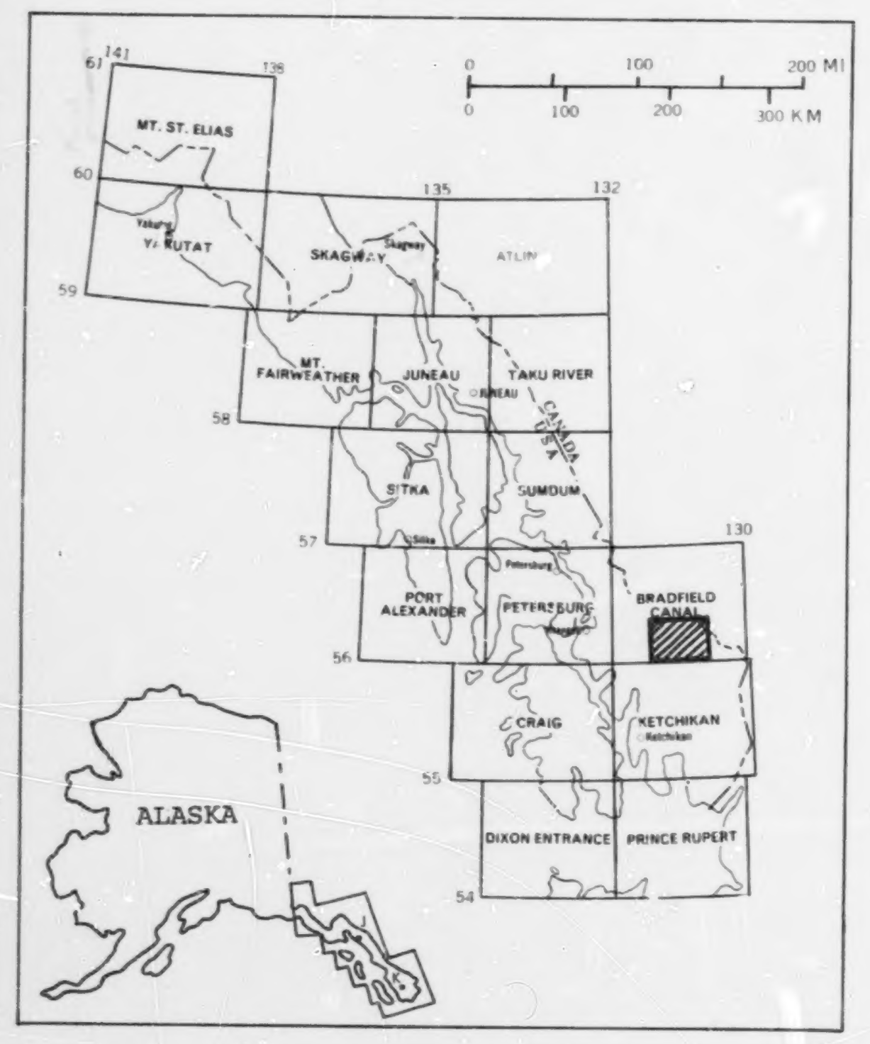
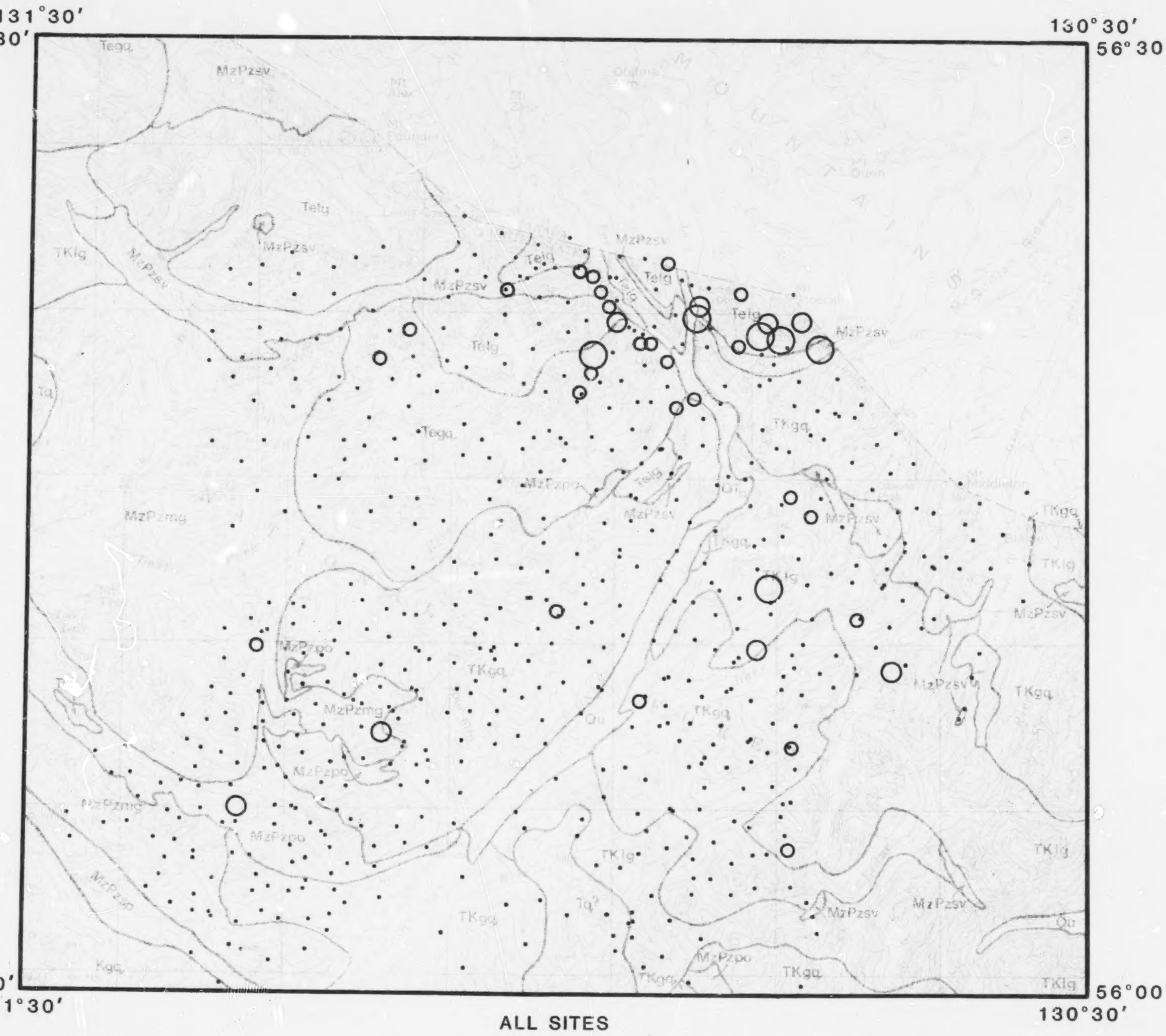
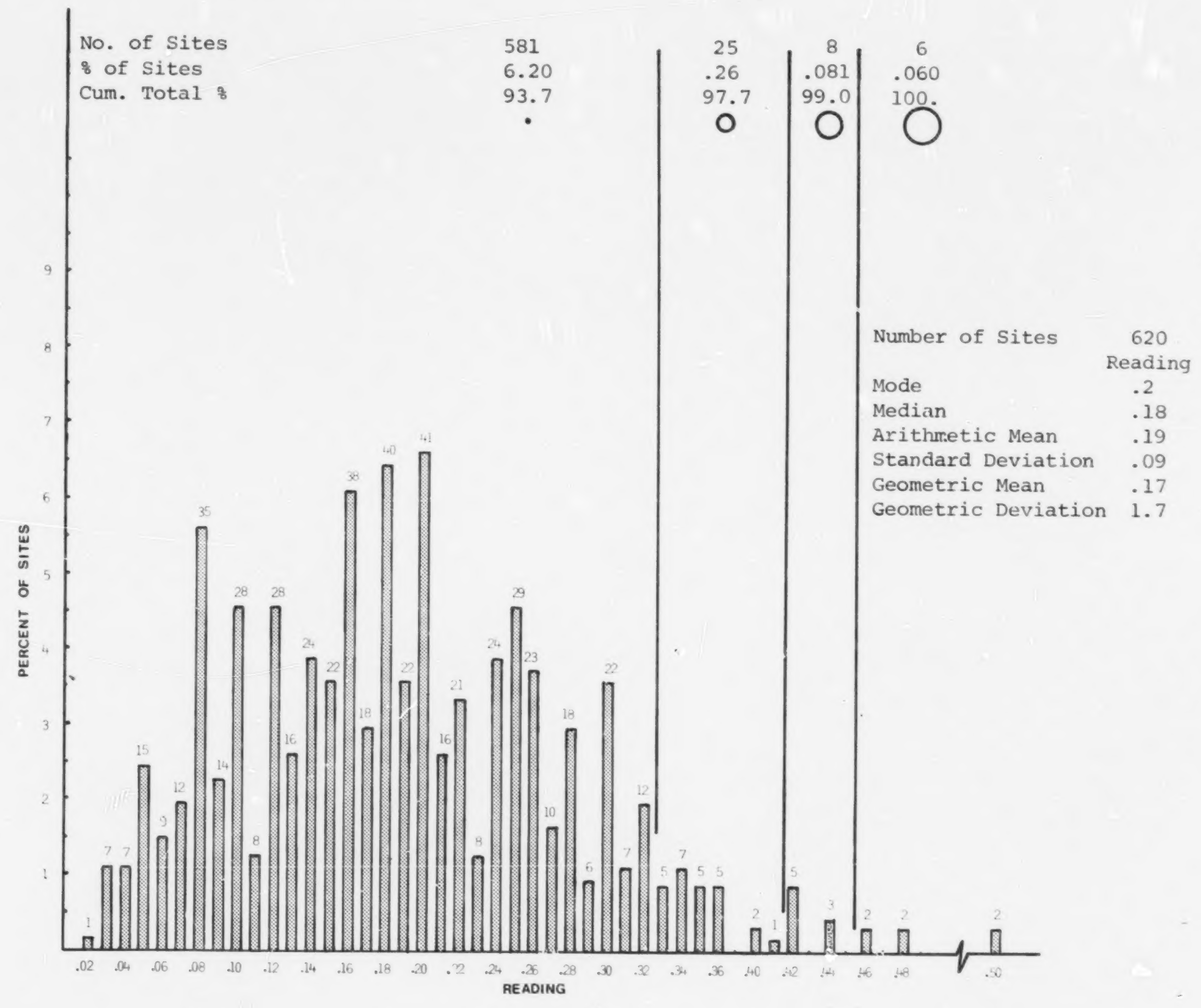


APPROXIMATE MEAN DECLINATION, 1955





ALL SITES



No. of Sites	581	25	8	6
% of Sites	6.20	.26	.081	.060
Cum. Total %	93.7	97.7	99.0	100.

Number of Sites	620
	Reading
Mode	.2
Median	.18
Arithmetic Mean	.19
Standard Deviation	.09
Geometric Mean	.17
Geometric Deviation	1.7

ALL SITES

AMMA-RAY INTENSITIES AT GROUND STATIONS IN THE BRADFIELD CANAL QUADRANGLE, SOUTHEASTERN ALASKA

by

R. D. KOCH, R. L. ELLIOTT, AND RICHARD ROSSITER

1981

This report is preliminary and has not been reviewed for conformity with Geological Survey editorial standards and stratigraphic nomenclature.